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ABSTRACT

This secondary level anthropology textbook emphasizes the comparison of the patterns of culture change which resulted in complex societies (civilizations) in six different areas around the world. The textbook stresses problem-solving and is centered around three questions: In what manner and through what stages did these civilizations evolve? What characteristics of each region promoted this emergence? and What is civilization? The readings are presented in five separately bound books. Book I, The Emergence of Civilization, includes introductory information: a discussion of the prelude to civilization, the agricultural revolution; and examinations of Mesopotamia and Peru as case studies in the emergence of civilization. Titles of case studies (Books II through VI) bound with include: "The Civilization of the Pyramids: Egypt;" "An Enigmatic Civilization: The Indus Valley;" "Bronze Vessels and Oracle Bones;" "Civilization Develops in China;" "Priests and Warriors, Builders and Sculptors, Mathematicians and Astronomers: The Civilization of Middle America;" and "Thinking about the Growth of Civilization: New Evidence and New Understanding". A handbook for teachers (SO 012 147) accompanies the textbook and provides sypplementary readings, daily schedules, commentary on the material, homework assignments, and class activities. (KC)

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THE EMERGENCE OF CIVILIZATION

by

Jack Ellison

Revised Edition

For experimental use during the school year 1964-65.
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Thinking abouth the Growth of Civilization -- New Evidence and New Understanding

I

THE EMERGENCE OF CIVILIZATION

Thinking About Civilization

New York, San Francisco, New Orleans, Chicago, Boston, these names evoke a feeling of excitement. They represent places that teem with people; they are centers of trade and commerce which handle a vast array of goods; their museums, universities, and concert halls offer a variety of stimulation; they are centers in which great buildings crowd together and in which intellectuals gather and books are published. They are magnets for peoples of all nationalities, races, and religions.

Athens, Alexandria, Rome, Constantinople, Florence, Venice, Paris, Vienna, London. These are centers where great ideas were born, where the arts and architecture flourished, and where the political and economic fate of man was decided. These names evoke the past, the history of civilization.

Where do we look for the roots of civilization? Less than six thousand years ago, civilization began to take form in the valley of the Tigris and Euphrates rivers in Mesopotamia; five thousand years ago in the Nile Valley in Egypt; forty-five hundred years ago in the Indus Valley of Pakistan in India; thirty-five hundred years ago in the Hwang Ho Basin in China; and twenty-five hundred years ago in Middle America and in the Andean region of Peru and Bolivia. In each of these six centers we can observe--sometimes hazily, at other times more clearly and fully--people making the long transition from precivilization to civilization.

These six emergent civilizations represent all the examples there are. All other civilizations that we know are derived from these, that is, they are built upon the foundations already established in these earliest civilizations. It is not even clear how many of these six were entirely independent. We can be sure of only two--Mesopotamia and Middle America. Certain discoveries, inventions, and beliefs spread from Mesopotamia to the Nile Valley, the Indus Valley and perhaps even to the Hwang Ho Basin in China, and some spread from Middle America to South America. However, the influence of these two centers on the other four was neither extensive nor continuous. We can with justice say that these areas are the places where we can study the emergence of civilization.

Reconstructing a People's Way of Life

The total way of life which distinguishes one people from another--their design for living--is the "culture" of that group of people. Expressions such as "Baseball is so typically American," or "How very French," imply an idea in the mind of the speaker of an American or a Frence way of life. But the way of life of Americans or of the French is much more than just baseball or French fashions. It is "the way the members of a group of people think and believe and live, the tools they make and the way they do things."[1] To reconstruct a people's way of life--their culture--in those periods of the past before there were written records is the aim of archeology. Once the written record becomes available and full enough to tell the story, the historian takes over. But the archeologist is interested in man's history before it was recorded in writing and he must look for other sources of information.

Digging Up the Past

Wherever people have lived they have left behind evidence of their presence. The remains of campsites or of ruined dwellings, abandoned tools and utensils, accumulated debris--all are evidence of earlier occupation. Anyone's wastebasket contains information about his personal way of life. The discarded stub of yesterday's baseball ticket may lie under today's newspaper, and the notice of tomorrow's choir practice may be thrown on top of that. You can reconstruct a sequence of parts of three days in an individual's life just by carefully removing the layers of castoffs in his wastebasket and tracing his activities backward in time. The town dump is the wastebasket of the entire town, and contains information about the culture of the community. There, a current model of a fluorescent light fixture and a TV antenna may lie among the debris on the surface, but in the layer below there may be incandescent light bulbs and ten-year-old radio tubes; below these may lie parts of kerosene lamps, and still further down--if the dump is an old one--there may be candle molds and candleholders. Such an accumulation, layer upon layer, has its own calendar of events. Unless something occurred to destroy the order of the original layers--or strata, as the archeologist calls them--a person who excavated the dump systematically could roughly trace the story of the use of lighting equipment in this community over several generations. Some dumps are all in one layer--automobile junkyards, for example. But almost anyone can tell which cars are the more recent models, and an expert can identify all of them, including even the smallest parts of individual cars, according to the changes of automobile styles over the years. So, both the sequence of layers in which remains are found and the changes in style over time are indicators of the relative age of the objects.

Archeologists study man-made objects--or artifacts--in order to piece together the long history of man's culture. When an archeologist working in Mesopotamia attempts to reconstruct the culture of an early village-farming community or of a Sumerian city-state, and thus follow the development from a relatively simple village-farming community to the complex civilization of a Sumerian city-state, one of the items on which he depends for information is the tools man has made and used. Stone and metal tools survive in the ground for thousands of years. From studying them the archeologist learns much about how the people lived.

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[1] R. J. Braidwood, Prehistoric Men, p. 38.

Another durable material is pottery. Whole pots and also the broken pieces, called sherds, are very important to the archeologist because they are found in large quantities. The way in which a pot is made, the material used, and the details of the design are all clues for the archeologist to the way of life of the people who made and used that pottery. From these and other sources he reconstructs the life of the period so that, as one archeologist says, "We are not digging up things, but people."

Archeologists who investigate ancient sites to learn when and where and how man first developed civilization are trying to solve problems, trying to piece together the story of man's development by working with man-made objects, or artifacts, from a particular time and a particular place. In order to come closer to a solution to the problem he is working on, the modern archeologist spends months and years at one site, first "digging up the past" and then interpreting what he has found. This attitude distinguishes him from many earlier archeologists who were more interested in the spectacular finds thay could bring back to display in their museums.

In order to piece together this long history of man, the archeologist has worked out special techniques. He knows how to find a site that will shed light on the problem he is studying by surveying the region in which it may be located. He may use aerialphotography to reveal ancient disturbances not visible to the naked eye. He is accompanied by other archeologists and students; he hires local workers and trains them to dig carefully.

The archeologist uses techniques also used by the geologist and paleontologist--he learns about the age of the ancient materials he finds by studying the stratification--the layers in which objects are found--and by observing the association of objects--what things are found together. Objects found buried more deeply are older than things found closer to the surface--unless there has been a disturbance of the layers of the deposit. And objects found in association with each other presumably existed at the same time and were used by the same people. While the digging is taking place, everything found is carefully recorded because a site can be dug only once. When, in the excavation of an ancient building, an archeologist finds a piece of pottery lying in a certain position, in a certain room, he records its exact position in the room as well as its relation to the other objects in the room and the position of the room in the total building. Drawings and photographs complete his record. Using these observations and records, the archeologist can continue his study of the material after he has left the site.

Modern archeologists work closely with other scientists in analyzing the material they find. Both botanists and geologists help the archeologist to reconstruct a reasonably accurate picture of the physical environment of the area during the particular time-period he is studying. The archeologist, by observing the sequence of layers in a site, knows only the relative age of the objects--which were earlier than others. But the geologists and chemists help him learn about the age in years, that is, the absolute age. Geologists have for years been called upon to help with dating archeological finds by identifying the geological age of the strata through which the archeologist is digging. Chemistry provides the archeologist with another technique for finding the absolute age of the material he digs up. By this method of dating, the age of archeological samples of plant and animal material is determined by measuring the amount of Carbon-14 they contain. This radioactive element exists in all living substances. But after life is extinct, Carbon-14 begins to decay at a known rate. The amount of loss indicates the age of the substance. Botanists help in identifying the kinds of grain found in archeological sites, zoologists identify the animal bones, and both botanists and zoologists study the archeological material for evidence of the change from wild plants and animals to domesticated varieties. Physical anthropologists contribute by investigating the human bones found at the site. Epigraphers are called upon to decipher and translate inscriptions on imperishable materials such as clay and stone.

A related science which helps the archeologist to understand the man-made remains he finds is ethnology. One part of ethnology is the comparative study of nonliterate societies--societies without writing--such as the Eskimos, the Pygmies, the Australian aborigines, groups which have remained small and somewhat isolated and homogeneous. The archeologist can learn from the ethnologist how members of such societies tend to live and to organize themselves to get things done, what tools and traps and weapons they make. Such information provides clues to the meaning of objects uncovered at archeological sites. These are only clues, of course, because no people living today have a way of life about which one can say, "That is how our ancestors lived 20,000, 10,000, or 5,000 years ago."

Ethnology, geology, botany, chemistry, zoology, these and other sciences contribute to archeology. Archeologists, like other scientists, call upon experts in many other fields to help solve the problem at hand. No longer does any one scientist work alone.

Interpreting the Evidence

The contents of a wastebasket, being largely written materials, are for the historian to interpret. Objects in the town dump are another matter. In most places in the world, paper and textiles, or wood and paint left on the surface or in the ground are quickly destroyed by moisture and other environmental factors. Materials that resist decay, such as stone, clay, metals, sometimes wood, represent only a fraction of the people's total possessions, and tell only indirectly of the nonmaterial life of those people--of their religion, their poetry, their government or their daily life. Nevertheless, such objects tell a great deal to anyone who asks the right questions. For example, it is useless to speculate about the language spoken by the maker of an arrowhead, or a piece of pottery, but it is possible to gain other information about him, his skill as a craftsman, his sources for raw material, the uses he made of the object.

An archeologist's reconstruction of past events depends on these two things: the material he finds, and his ability to read meaning into this material. In addition, he is influenced by the prevailing thought of his time. Under the impact of nineteenth century evolutionary thinking, archeologists became keenly interested in tracing the evolution of culture. Just as Charles Darwin believed that man, a higher form, evolved from lower animal forms, so did scholars studying the tools and other remains of ancient man, conceive of an evolution of man's culture from lower levels to higher. They named the lower levels "savagery" and "barbarism," and the higher, "civilization," and, more often than not, they looked upon their own culture--that of nineteenth century England--as the highest achievement up to that time. Though scholars today do not accept this simple theory that century by century and year by year man has become better and better, yet the general notion of steady and continued progress from man's earliest times to the present is still current.

In the atmosphere of evolutionary thinking and in the excitement of the developing scientific approach, nineteenth century archeologists took a first step in bringing system into their study of ancient man by classifying the known remains. At that time, the only remains of ancient man found in any quantity were stone tools. Archeologists interested in tracing the evolution of man classified these tools into a series based on the relative age of the strata in which the tools had been found. They also analyzed the variety of ways in which the crude stones had been made into tools to see what changes had taken place. From the analysis of the stone tools found in western Europe, they worked out a system of classifying stone-working techniques. The earliest stone-working method was chipping one stone with another. The period of this stone-working was named the "paleolithic," from the Greek paleo (early) and lithos (stone). The next, the "neolithic," was the period in which the tools were made by grinding one stone against another. Between these two periods came one named the "mesolithic." This period did not have a very distinct style, but represented a slow transition from "paleolithic" to "neolithic."

The archeologists who worked out the classification of western European tool types assumed that early stone tool types had been the same all over the world. But it turned out that the ancient materials of the New World did not fit this classification. The later archeologists worked out a different terminology to classify the materials of Middle America and of the Andean regions in South America.

In recent years the attention of some archeologists has shifted from the analysis of changing tool types to studying other kinds of changes in man's history. The interest in the "paleolithic" and "neolithic" has shifted to an interest in the origin and spread of agriculture. It is only in recent years and with the help of many other scientists that archeologists have had enough information to be able to analyze and describe in detail the early stages of man's discovery of agriculture and also of the domestication of animals. In some parts of the world, the beginning of agriculture occurred at the time when people were making tools by grinding--the "neolithic" level. Because of this, the long span of time during which the Agricultural Revolution was taking place is often referred to in textbooks as the "neolithic" level. But this is not the case everywhere. In some places, ground stone tools appeared before there was any farming, and in other places, afterwards. Thus the term "neolithic" has now been abandoned by some archeologists who prefer to think about this level of culture as the time of the appearance of "village-farming communities"--a term that focuses attention on that development which is of greatest importance.

Looking for Regularities

Archeologists, like other scientists, like to find general rules that will bring some order and meaning to the vast amounts of material they dig up. Because scientists are uneasy when every object and every event for which the object stands is seen as unique, they work to find general principles that explain seemingly unrelated objects and events. They look for regularities in the material they study. One archeologist, V. Gordon Childe, sought to understand the emergence of civilization in the Mesopotamia area by examining the archeological material for evidence of such regularities. On the basis of his study, he proposed a set of criteria, or characteristics, which he believed defined the emergence of civilization in Mesopotamia. These are:

1. Large and thickly populated settlements
2. A variety of specialized occupations
3. The ability to produce and store surplus food and other goods
4. Large public buildings
5. A variety and ranking of social positions
6. Writing and a system of notation
7. The beginning of science
8. The development of an important art style
9. Trading over long distances
10. The beginning of social control based on a central government rather than on kinship

In Childe's view, the development from precivilization to civilization was a change in the quality of lifeways. What took place was not only a quantitative adding of new features such as massive buildings, or long-distance trade, or writing, but also a qualitative change in the way people lived--in their society. The automobile developed from the wagon, in a sense, but at some point so obviously exceeded the capacities and functions of a wagon that it could no longer be considered simply a more elaborate wagon. So too, at some point, certain precivilized societies changed distinctively and became something altogether new--more complex and elaborate not only in terms of their technology but also in human, social terms.

Childe's criteria do not necessarily fit the other five emergent civilizations because each civilization developed some unique characteristics, but his categories do remain useful ways in which to think about early civilization.

Comparing the Results

The present-day archeologist has the advantage of being able to broaden his understanding of the emergence of civilization by comparing the results of his studies with the results of fellow archeologists working in other areas of the world. If the criteria for the emergence of civilization in Mesopotamia help you to see regularities in the development of the other civilizations, you will understand better the nature of scientific observation and analysis. In reading about the emergence of these six civilizations, you should consider whether there is a particular order, or sequence of developments, whether certain developments always come after and depend upon earlier ones. You may also consider whether some factors existing at one time are interdependent--are closely related to each other. If identical or similar factors are present in every stage of every civilization then perhaps we may conclude that all civilizations pass through similar stages of development and that there are some regularities or historical laws in the emergence of civilization. We may find some answers to the central questions: what took place in the development of each of the six earliest civilizations, and why did they arise where they did and when they did?

II

PRELUDE TO CIVILIZATION: THE AGRICULTURAL REVOLUTION

> It must be obvious that civilization cannot exist without food-production and that food-production must also be at a pretty efficient level of village-farming before civilization can even begin.[1]

For most of the period of human history--for several hundred thousand years--men lived by gathering their food. For these hundreds of generations, they hunted or fished or collected the food available in the woods or streams, the mountains or plains around them and in doing so, spread over most of the world. Today, there are food-gathering people in what we think of as remote areas--the aborigines in Australia, the Bushmen in South Africa, the Eskimo. These people just happen to have lived outside of the few areas of the world where the idea of planting first started or to which it spread. But like all food-gatherers, they are extraordinarily observant of nature, and most resourceful and ingenious in the invention of complex tools and weapons for obtaining food.

Because of the limited quantities of wild foods, food-gathering societies are, with few exceptions, small groups which live somewhat isolated from one another. They are usually self-sufficient family groups or several such family groups together. They know each other as kin, and their obligations toward each other and toward the group are based on kinship relationships. Such groups are quite homogeneous. That is, all able-bodied individuals do much the same kind of work--hunting, or fishing, or collecting food, or some combination of these.

Under such circumstances, the improvement of food-gathering technology--that is to say their tools and weapons--is the group's one means of obtaining more food from the same environment. The story of this technological development is, in a sense, the thread that runs through the archeological record of early man. The record is complex because the types of tools and weapons vary from one place to another and from one time period to another, depending on the local game and plants for which particular tools and weapons were made.

Much of food-gathering is an individual job, dependent on one person's skill with a weapon or one person's keenness of eyesight; but some food-gathering techniques, such as group hunting for large animals, require group activity and coordination. Much of food-gathering requires a nomadic life; but over a long period of time, as new sources of food became available, some gatherers developed certain kinds of traps and nets which were permanent installations in rivers or along shores. It seems likely that these kinds of changes--increased cooperative hunting and more permanent locations of traps--were accompanied by some changes in the way people lived. Possibly their settlements became more permanent, and perhaps the relationship between such settlements also changed.

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[1] R. J. Braidwood, Prehistoric Men, p. 146.

The discovery of agriculture and the domestication of animals made possible yet another way of life. These revolutionary events opened up a new era for man in those parts of the world where he began to develop the production of his own food. This came about in various ways. In the upland area of the Tigris and Euphrates river valley, for instance, most of the wild grasses spread their seeds in the wind, but there were varieties of wild wheat and barley which behaved otherwise. Because of a recessive gene, these plants had tough spikes and intact heads and did not spread their seeds. As a result of this, the food gatherers in that area had a large proportion of these seeds when they gathered grain, and when they did begin to plant seeds, they planted these tough-spiked varieties. The first animal to be domesticated may have been the wild ancestor of the dog--but probably the dog adopted man. Goats and sheep and pigs, on the other hand--animals whose wild ancestors roamed in herds--may first have been domesticated singly as pets. Only later, as man became more sedentary, did he develop extensive control over herds of animals, domesticating them for the meat and hides. The wild ancestors of the sheep had hairy coats, but eventually some of the domesticated varieties developed wool.

There are various sources of information on the foods available to early man. Two examples represent the kind of finds which excite the archeologist who is interested in solving problems--one is from Jarmo in Iraq and one from Tepe Asiab in Iran. At Jarmo (ca. 6750 B. C.), many imprints of wheat and barley in clay were found. These would not be much to look at behind the glass case in a museum, but they gave information so vital to understanding this crucial period of the Agricultural Revolution as to far surpass in interest a trunkload of royal jewels. At Tepe Asiab were found "many coprolites (fossilized excrement) that appear to be of human origin. They contain abundant impressions of plant and animal foods, and when analyzed in the laboratory they promise to be a gold mine of clues to the diet of the Tepe Asiab people." Clearly, "The nature of these 'antiquities' suggests how the study of the agricultural revolution differs from the archeology of ancient cities and tombs."[1]

Gradually, over the centuries, the people who had first planted seeds and tamed wild animals could count on a more reliable source of food. This food production made possible--or even necessary--larger concentrations of population than was previously possible and people began to live in settled villages. Many societies continued at this level of village-farming for thousands of years. In only a few places in the world did the agricultural revolution lead to the emergence of civilization.

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[1] R. J. Braidwood, The Agricultural Revolution, p. 134-5.

Was this development of agriculture a revolution in the sense of a sudden, explosive event? Our best evidence on these questions comes from the New World, from the cave sites in the mountain of Tamaulipas in Mexico, for which we have the following sequence of events:[1]

As early as 7000-5000 B. C.	Mostly wild plants but probably domesticated pumpkins, possibly domesticated peppers. Semi-nomadic hunters.
5000-3000 B. C.	70% - 80% of diet came from collection of wild plants. 5% - 8% from domesticated plants. The rest from hunting.
3000-2000 B. C.	70% - 80% of diet still from wild plants. 10% - 15% from domesticated plants (red beans have been added and a primitive maize).
2200-1800 B. C.	65% from plant collecting. 20% from agriculture. Cotton cloth is now found and metates and manos for grinding grain.
1800-1400 B. C.	60% from wild plants. 30% from agriculture (with a new type of squash added).
By 1500 B. C.	The transition takes place to established cultivation with maize, beans and squash; plus chili peppers, cacao, sweet manioc, etc.

Certainly, in this situation in Tamaulipas, there was no sudden moment at which a group said, "Aha, now we have discovered how to produce foods; we will give up our past way of life and live on domesticated plants." Instead, there was a period of increasingly intensive food collection and of incipient cultivation which lasted a very long time at this site.

In Southwest Asia, the period of incipient cultivation and domestication of animals also covered a long stretch of time. There is evidence that during the 2000 years from circa 9000 B. C. to 7000 B. C., the people living along the hilly flanks of the Tigris and Euphrates rivers and in the adjacent upland zones began exploiting the resources of the area more fully. In the sites of this period wild wheat and barley, stone sickle blades, mortars and pounders are found for the first time, suggesting that these wild grains were now being cut down and ground for food. Evidence of the increase of snails and mussels in the diet tells us that the people of the time were making more intensive use of the food possibilities of the area.

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[1] Gordon Willey, "Meso-America," in Courses Toward Urban Life, p. 88-9.

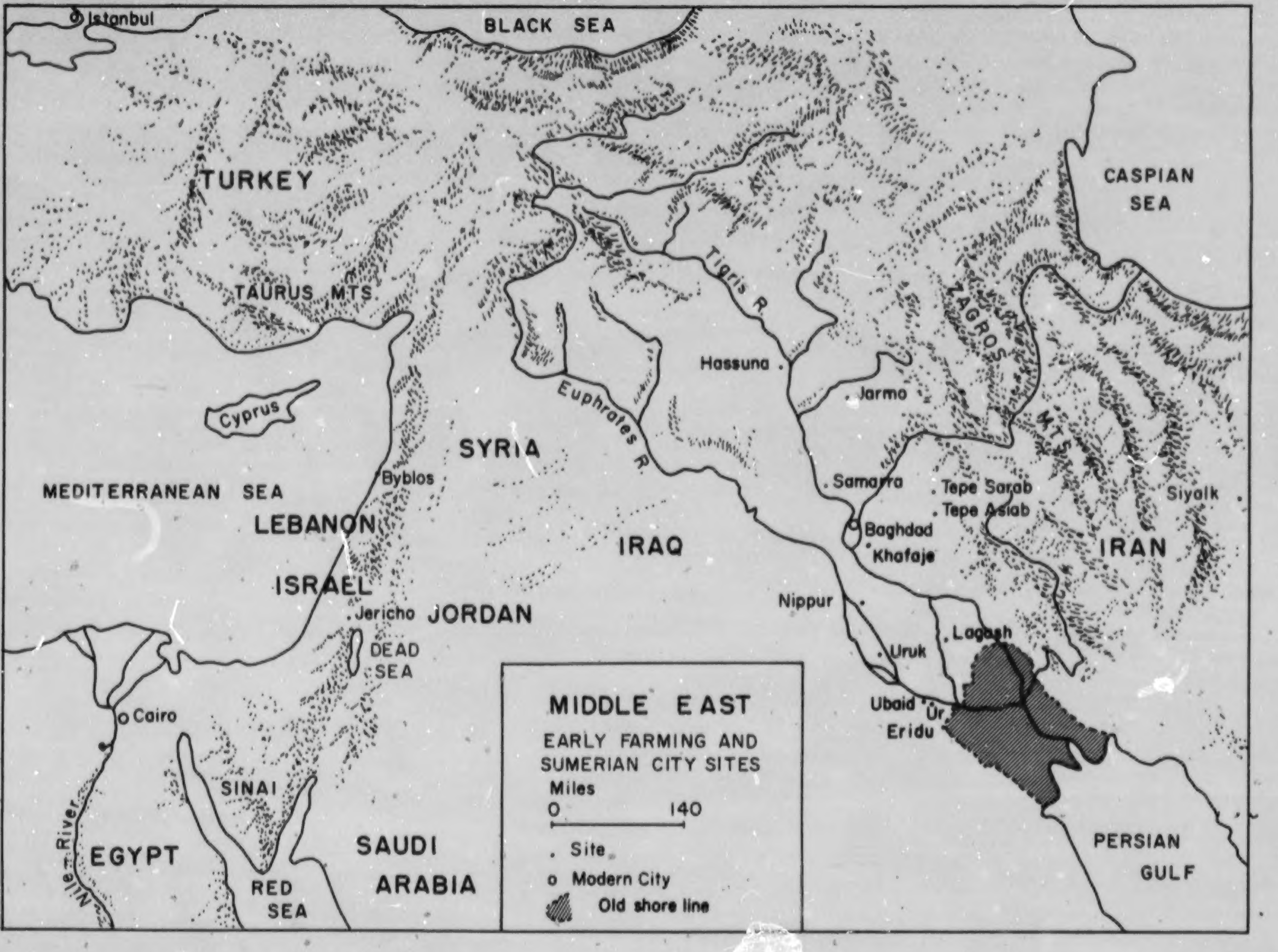
There was a long span of time during which domestication was catching hold and the first production of food was as a supplement to the pattern of food collecting. By 7000-6500 B. C. at Jarmo (in Iraq) and Tepe Sarab (in Iran), there is evidence of the end results of many, many years of development. Reliable evidence of two-row barley and two kinds of wheat has been found in these excavations. There is also evidence of the domesticated goat, probably the sheep and the dog, and certainly the pig--in the upper (more recent) levels of the site.

Recent evidence indicates that there were other regions where the domestication of plants and animals was taking place in the same time range as at Jarmo. One such region, northwest of the hilly flanks, was along the slopes of the Zagros mountains where evidence of domesticated barley, and two kinds of wheat has been found; also the domesticated goat, sheep, and pig. In another region, along the slopes of the Taurus mountains, cattle and the pig had been domesticated, and maybe a kind of wheat. In a third region, Lebanon, evidence has been found that goats (but not sheep) had been domesticated, and also some unidentified kinds of grain. What does all this mean? It looks as though the domestication of plants and animals occurred in several areas of Southwest Asia at about the same time, and that different animals or grains were dominant in each area.

By about 6000 B. C. many people controlled the planting of crops and the breeding of animals. The earliest crops and animals were probably suited only to those areas where they grew wild. When they were planted in even slightly different areas, genetic changes occurred that resulted in new and more adaptable strains of plants and animals, strains which could survive in a variety of climates. Man was then able to move with his herds and seeds to a new area. In Mesopotamia, he moved to level ground but still within an area of adequate spring and winter rains. Still later, with even more adaptable plants and animals, he moved further into the river valleys where the climate was arid and flooding a constant danger, but where the richness and productivity of the soil lured him.

The Agricultural Revolution was not, then, a sudden explosion. It was a gradual process, not a single event. But looked at over the vast stretch of man's life on earth, it was a turning point when something different happened, when a qualitative, not just a quantitative, change took place.

Such was the Agricultural Revolution--a great move forward in man's mastery of his physical environment. The next developments--the emergence of civilizations--were of a different kind and represent changes in man's interaction with his fellow men rather than with his environment. But these changes did not follow inevitably upon the discovery of agriculture. For reasons that are only partially clear, these changes did not occur in all the areas that passed through the Agricultural Revolution, but only in certain places at certain times.


MIDDLE EAST
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CASPIAN SEA
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Tigris R.
ZAGROS MTS
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Jarmo
Euphrates R.
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Ubaid
Ur
Eridu
PERSIAN GULF
Cairo
SINAI
Nile River
EGYPT
RED SEA
SAUDI ARABIA

III

MESOPOTAMIA: THE EARLIEST CITIES

A Different Way of Life Develops

Just as the Agricultural Revolution appears to have occurred first in southwestern Asia, so does the emergence of civilization. Our evidence for the Agricultural Revolution comes from a broad area along the hilly flanks of the "fertile crescent" and the adjoining uplands of Turkey and Iran. But the evidence for the emergence of civilization comes from a quite different environment, that of the Tigris and Euphrates delta and river valleys.

The upland zones enjoyed a temperate climate and reliable rainfall, and they were the scene of some basic advances in social life during the two thousand years before civilization emerged to the south. This was the era of the village-farming community. By about 7,000 B.C. in the Iraqi village of Jarmo, for example, about 20 families totaling 150 persons had settled down in one community. They planted both wheat and barley, and kept sheep, goats, and eventually pigs and perhaps cattle, though they also continued to hunt to supplement their food supply. They lived in small but fairly solid houses, which were built of sun-dried mud walls and contained several rectangular rooms. In one of the rooms stood a domed oven, for baking bread from grain stored nearby. The Jarmo people produced a respectable inventory of tools made of chipped stone, ground stone, and bone; many of the chipped stone tools were made of obsidian, which had to be secured from at least 300 miles away. Finally, in the last third of the life of this village, the idea of making portable pottery appeared. Jarmo was by now a permanent village that depended for subsistence on mixed farming rather than hunting and gathering, and that participated in the trade of obsidian--and possibly of ideas--as well.

The next site in Iraq is Hassuna, which at present is dated at about a thousand years after Jarmo. The Hassuna people had almost stopped producing chipped stone tools of good quality, but they made and also ornamented pottery in a number of different ways. This was the beginning of painted pottery and it reached real heights of beauty at Hassuna and also at Samarra. The Hassuna people knew also how to weave.

Then, from the site of Siyalk in Iran, which is only slightly later in time than Hassuna, we find hammered copper tools, made from local deposits of this metal.

So, in terms of technology, craftsmanship in pottery-making, weaving, and metallurgy--all made their appearance in the uplands of southwestern Asia during the village-farming era.

For this era we also have evidence for other kinds of social behavior besides the community living and the limited trade practiced by people such as the villagers of Jarmo. In the category of religion, for example, clay figurines of pregnant women have turned up in sites throughout this area, and have been interpreted as indicating some kind of domestic cult, or at least a set of religious beliefs, directed toward enhancing the fertility of crops, or animals, or people. Moreover, we know that over time there developed an extensive trade in pottery during this era.

But some of the most dramatic evidence of new developments comes from the site of Jericho, in Jordan. Here, there were found in the houses signs of what might be family shrines. Also, funeral practices revealed a transition, from lower to higher levels of the excavation, from a custom of cutting off the head of a corpse and burying head and torso separately, to later using the skull as a base for modeling with clay a kind of sculptured portrait as a memorial to the deceased. Jericho provides evidence of warfare customs as well. Thus Jericho, where at one point as many as 3,000 persons lived, was fortified with a massive stone wall complete with inner stairways to reach the top and also round towers that were set into the wall at intervals. However, these data from Jericho need to be interpreted with care. According to present information, Jericho was pretty much contemporary with Jarmo, and yet, how much more elaborated the Jericho culture seems to be! Again, Jericho happens to lie in a distinctive environmental pocket, tropical and well below sea level, so that while it is located within the fertile crescent, it is not environmentally of it.

Considering that so many technological and social advances took place in the fertile crescent and adjoining uplands during the village-farming era, one might have expected the inhabitants of the uplands to develop a still more complex technology and social life. But they did not. Today there are simple Kurdish farming villages near the site of Jarmo which probably look not much different from the way Jarmo looked several millennia ago.

Civilization did emerge only a few hundred miles to the south, however, on the Tigris-Euphrates delta. But who were the people who adapted the upland advances in technology and in stable village-farming to such a different environment?

The Problems and Potentialities of the River Valley

Surely the environment of the delta must have been fully as challenging to man's ingenuity as it may have seemed lush and inviting. At that time, the delta was fairly new and extraordinarily fertile land, formed from silt deposited at the edge of the Persian Gulf by the two mighty rivers. Wild fowl and game thronged the reedy marshes, fish teemed in the waters, and the date palms thrived on every emergent patch of land, to annually yield up fruit for the taking. On the other hand, the delta and the valleys proper were hemmed in all around by a semi-arid wilderness baking under a hot sun. Such an environment provided no timber suitable for construction, nor did it contain any stone at all, whether for construction or for tools.

Our unidentified pioneers accepted the challenge of this environment. They exploited the natural abundance by adding the dates and fish to their diet. They built some structures of sun-dried bricks, some of baked bricks, and probably still others of reeds and the soft palm wood. They made their sickles and hoes of baked clay. Above all, they took steps to tame the mighty rivers. As farmers, they strove to gain the greatest possible harvest from the fertile soil, and to achieve their aim, they invented and practiced small-scale irrigation techniques. These consisted of digging and maintaining short canals leading from the river channels into the fields. There is no evidence for large-scale irrigation projects directed by the state until after cities and civilization have developed in Mesopotamia.

Another problem they faced was the constant danger of floods. The rivers which made possible the great fertility of the land could also sweep away the results of that fertility. This ever-present danger had a profound effect on the Mesopotamian's view of life, making him feel helpless against the unpredictable catastrophes of nature. Thorkild Jacobsen puts this feeling very vividly:

> The Tigris and Euphrates are not like the Nile; they may rise unpredictably and fitfully, breaking man's dykes and submerging his crops. There are scorching winds which smother man in dust, threaten to suffocate him; there are torrential rains which turn all firm ground into a sea of mud and rob man of his freedom of movement; all travel bogs down. Here, in Mesopotamia, Nature stays not her hand; in her full might she cuts across and overrides man's will, makes him feel to the full how slightly he matters.[1]

The Bible story of Noah and the Flood must refer to some such disaster.

We do not know for certain who these people were who instituted a line of social development that culminated 1,500 years later in that pinnacle of achievement, the Sumerian city-state. They may have been hunting and gathering folk already living in the south, who came into contact with the people to the north, saw the advantage of the new farming techniques, and took them over. They may have been people from the north who moved, with their new way of life, down into the river valleys. Whatever the case, these people were the cultural ancestors of the Sumerians.

The Ubaid Period: First Indications of Civilization (4600 B. C. - 3600 B. C.)

It has been convenient to speak in terms of "pioneers," but there was no one group of village-farming people who initiated the trend toward civilization in the

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[1] H. Frankfort et al. Before Philosophy, pp. 138-39.

Tigris-Euphrates valleys. Rather, it appears that several upland communities experimented with adapting their cultures to lower altitudes. Thus the bottom levels at the site of Eridu in southern Mesopotamia contained a handsome painted pottery that may be seen as a blend of two pottery styles from the north, namely, the Samarran style, and the Halafian style named after a site farther north on the Syro-Turkish border. And there may have been an intrusion of elements from the culture of the riverine food-collectors who inhabited southern Mesopotamia before any farming was carried on there.[2]

Above these lowest (earliest) levels at Eridu comes a new style of pottery, and, above this, comes the rich assemblage called Ubaid. The people of the Ubaidian period made the successful village-farming adaptations in southern Mesopotamia. They did it over a thousand years, from about 4600 B.C. to about 3600 B.C.

The name of this period comes from the site of Ubaid itself, which revealed a village of farmers who also kept livestock and hunted and fished. The village was not far from Eridu and was close to the Euphrates, and the villagers made and used boats constructed of bundles of reeds.

But from Eridu and other sides such as Ur, we know that people of the Ubaid period also lived in towns. Indeed, it is thought that Eridu had a population of several thousand persons before 4000 B.C. No doubt most of the townsfolk were also farmers and herders, but some must have been part-time or full-time specialists. Ubaidian painted pottery is of a low level of technical excellence compared with that of, say, Samarra, and may have been carelessly made by mass-production techniques. A clay model of a ship with mast tells of river travel; the picture of a wheeled chariot on a seal shows that the invention of the wheel had also improved land travel.

Above all, towns had temples, and there must have been architects or engineers, laborers, and priests and temple officials. At the beginning of Ubaid Period, the temple of Eridu was only ten feet square. But this temple was subsequently rebuilt many times over, until, in its seventh reconstruction, it was a public monument 62 feet long, pilastered in ornamentation and raised on an artificial mound, and contained an altar in a central chamber. Ever greater artistry, skill, and labor surely went into each successive reconstruction. But we may also infer that priests and temple officials had more and more duties to perform in connection with both temple administration and ceremonies. In addition, they may have fulfilled political and economic functions with respect to the town and its satellite villages. It can be presumed that people of the rural villages which surrounded each town visited that town at least on ceremonial occasions.

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[2] Cf. Robert J. Braidwood, Prehistoric Men, p. 154.

We have already considered the possibility that several groups of people, several local cultures, contributed to the early growth of high culture in southern Mesopotamia, whether directly or indirectly. It remains to note that Ubaidian pottery and other artifacts have been found also in the north, well above Hassuna. Apparently there was now contact from southern Mesopotamia to the north, though the northern manifestations never flourished to the same extent as the southern.

Proto-Literate Period: 3400 B.C. - 3000 B.C.

For the two hundred years following the Ubaidian period, little can be said due to limited archeological evidence.

But then we reach the "Proto-Literate" period, and over a short four hundred years from about 3400 B.C. to 3000 B.C., we are confronted with evidence of urbanization and of several completely new cultural innovations. Both the sites and the temples from this period are large. The sites are easily the size of small cities. As for the temples, this was the period when the true ziggurat appeared, that is, a temple set high up on an elaborate stepped series of artificial mounds. These ziggurats are such impressive structures that they have been associated with the Sumerian city-states in the same way that the pyramids are associated with Egyptian civilization. As regards the size of temples, the famed White Temple from a high level at Uruk, though not a true ziggurat, was found to be 73 x 57 feet in dimensions, and set atop a vast platform 43 feet high and measuring no less than 217 x 230 feet ! Temples such as this one suggest that the population had increased considerably, that more craft specialists were at work, and that priests and temple officials also were more numerous. "The German excavators at the site of Uruk reckoned that the construction of only one of the Proto-Literate temple complexes there must have taken 1,500 men, each working a ten-hour day, five years to build."[3] Such an undertaking called for careful planning, and strong leadership and organization, and if priests and temple officials were more numerous, as the temple edifices were clearly more imposing, then they were probably also more powerful.

There is evidence for the presence of the plow and the use of draft animals, though it may be that these were already present in Ubaidian times. The use of the plow, together with constant extension of the irrigation system to open cultivable land for the increasing population, enabled the growing communities, and totally new communities, to get ever larger returns from the land. Surpluses of food in turn encouraged further increases in population. The greater the population in this situation of abundant food, the more individuals there were to specialize in occupations other than farming.

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[3] Robert J. Braidwood, Prehistoric Men, p. 151.

In the area of metallurgy, more and more vessels of copper and silver came into use, and metallurgists mastered the process of casting metal. We have noted that the upland village-farmers of Siyalk had been hammering copper into tools many centuries earlier, and it is true also that northern Ubaidian peoples had already possessed cast copper axes and other tools. In the south, however, metal had to be imported, so that copper artifacts are rare from southern Ubaidian sites. Such copper as there was tended to be in the form of weapons. Not until this Proto-Literate period did it become common enough for use in tools or utensils. Clearly the trade horizons of southern Mesopotamia were widening in this period.

But it was in the categories of plastic art and writing that the Proto-Literate people made brilliant and entirely unprecedented innovations. They developed techniques for sculpture which they applied in relief, in the round, and in the engraving of cylinder seals, and to a variety of media including marble and limestone. Further, they undertook to depict the human face and figure with sensitivity to proportion and detail, something no one before them had felt free to attempt in spite of the centuries of opportunity previously provided by the practice of ornamenting pottery. The other great achievement, the beginning of writing, we know of from clay tablets inscribed with pictograms and arbitrary signs, with the use of a reed.

Early Dynastic Period: 3000 B.C. - 2400 B.C.

By the next period, "Early Dynastic" times, cities such as Lagash, Nippur, and Uruk were positively flourishing as a consequence of the presence of greater wealth and the demands of the ruling group for luxury articles. Uruk now covered 1,100 acres and housed perhaps as many as 50,000 people. It was protected by a wall, outside of which spread the agricultural lands on which most of the inhabitants worked. In the center of the city was the temple-palace, with many courtyards and storage chambers, for Uruk was now a city-state, without any doubt, and was ruled over by a king. Radiating out from this center were the city streets, unpaved and dusty, but wide enough for wheeled vehicles. The homes of the wealthier citizens fronted directly on the streets, and the more modest dwellings stood behind. The larger houses had from twelve to sixteen rooms surrounding an open courtyard; they were two stories high, with a balcony off the second-story rooms. There were no windows on the street side, and all the light came from the courtyard, but in this brightly sunny climate, such light was adequate. The construction material was sun-dried brick.

One of the important inventions of the Mesopotamians was the true arch, which was used for the doorways of the homes. These doorways were very low--only five feet--and the residents, though shorter in stature than we, must have had to bend over as they went from room to room. Drainage was provided in the courtyard, the kitchen, and the latrine. The houses were handsomely furnished with carpets and hangings, benches and chairs, and low eating tables. Some even had private chapels with niches for statuettes and an altar for offerings. A custom which seems rather surprising to us is that these people buried their dead in a subterranean room under the floor of the house.

In the cities of this period there dwelt and worked many craftsmen who filled the needs of the temple, the palace, and the merchant class that traded with other communities near and far. There were carpenters, who built boats, carts and chariots, couches, chairs and tables, and, for the musicians, harps and lyres. In other shops, the metalworkers plied their trade. They had learned much earlier that by adding tin to copper they could produce a harder metal, bronze, but it was not easy to find sources of tin and copper, so bronze remained very expensive. However, the goldsmiths and silversmiths learned how to make beautiful filigree jewelry, delicate chain necklaces, and earrings; both they and the coppersmiths formed handsome vases of the precious metals as well. The potters were kept busy making thousands of articles, some utilitarian, others beautifully designed for the temple or the palace. Seal cutters engraved small cylinders of stone that were miniature works of art. When the cylinder was rolled across wet clay, it left a clear impression of the design. Archeologists have learned much about the Sumerians from the carvings on these seals, because some of the favorite motifs were the plants and animals that were most important in the lives of the Sumerians. Some of the cylinder seals served as a sign of ownership, a man's signature, so to speak. Each person of importance had his own seal, used to denote ownership by printing it on a clay marker. Seals are in use today, of course, as in the case of the seal of a university affixed to a diploma.

As might be expected, most of the sculpture was created for the temple and the palace. The sculptors, continuing in the tradition begun in Proto-Literate times, strove to make their work more lifelike. As it turned out, however, the art became more conventionalized with the passage of time.

That the Sumerian city-states of Early Dynastic times are a truly developed civilization is evident -- the earliest such civilization in the history of mankind. Having briefly surveyed the developments from the village-farming communities through Ubaid and Proto-Literate to Early Dynastic times, let us examine some of the more important aspects in greater depth.

Sumerians: Children of the Gods

Economy: The Manorial System. Sumerians developed a manorial type of economy. Estates were "owned" by some one god and administered by a temple, but it appears that royal and private estates existed at the same time although they are less well known. In some towns and cities, the temple estate was the wealthier and more dominant; in others, the royal estate was more powerful. In some cases a priest established or usurped the throne, and the two kinds of estates became essentially one and the same. Thus in some cities the leader was known as lugal, "king" or "great man"; in others he was called ensi, which may be translated as "governor" but has connotations of religious stewardship. Villages outside the cities were often private estates, smaller than temple or royal estates, but run along the same lines.

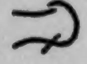
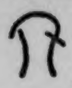
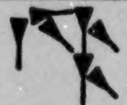
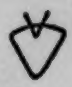
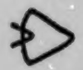
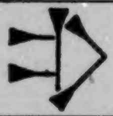
Land was administered by temple or palace officials, or by the landowner of a private estate, and these allotted parcels to each family that served the estate. The temple or palace also provided seed, draft animals, and implements to the workers. The families then worked the land both for their own subsistence and for the temple or palace, much as the serf of the Middle Ages in Europe worked both his own land and the land of his lord. That part of the produce which reverted to the temple or palace was inventoried and stored, and in due course put to various uses: it might be dispensed as rations to members of the community, it might be expended in religious rituals or festivals, it might be loaned out, part was reserved as seed for future sowing, and some was always saved to tide the populace over bad seasons. Some land was rented to tenant-farmers, for one-sixth to one-third of their produce. The estate administrators saw to it that the people kept the irrigation system working smoothly, and they protected the estate against bands of marauders or any other threat.

Each estate also had its specialists--its bakers and brewers, carpenters, weavers, metalworkers, potters, and administrative personnel. Often the craft groups were organized into guilds, with foremen of their own who acted as liaison in securing instructions from the head of the estate. The estate might also have merchants in its service, people who traded some of the estate's goods for materials produced on other estates, especially local specialties.

On the whole, though, any estate was a nearly self-sufficient community. People did not work for money, nor did they compete to get rich at the expense of other individuals. The great majority safely depended on the head of their estate to fill their needs, and he, in turn, depended on them to increase and protect his wealth and position.

The Development of Writing. Estate management was a complicated business, and as it became more complex, accounts were kept of the property and of the transactions of estates. Each parcel of land was listed in terms of its quality and allocation; receipts of rent from the tenant-farmers were recorded; detailed record was kept of how much seed was used, how much fodder was issued for animals, and so on. Allowances to the brewery, the kitchen, the bakery--all were accounted for in writing. Many examples of these accounts have come down to us on clay tablets. This earliest writing was used also for lists of the gods. Impressions were made on the soft clay tablets with a reed stylus, and the tablets were then baked to preserve them. The beginning of writing in Mesopotamia may have occurred even earlier than this Proto-Literate Period, with inscriptions on perishable wood which has been lost to us. Clearly, writing was one of the most significant of all man's inventions, as even a moment's reflection on the role of writing in the development of civilization suggests.

Sumerian writing is called "cuneiform." The earliest writers used pictograms, that is, they drew a simple picture of the object they had in mind, such as a fish, an ox, or grain. The pictures could not be left to the artistic whim of each scribe if anyone besides him was to understand the writing, so the pictures were standardized and drawn always the same way. Each pictogram thus became an ideogram, clearly conveying the idea of a particular thing. Since the ideograms were used mainly for keeping accounts, they were accompanied by numbers. A sign much like our small letter "d" represented the digit 1, two of them for the digit 2, and so on up to nine for the digit 9; a sign like our "O" stood for 10, and a sign like our "D" stood for 60 since the Sumerians used the sexagesimal notation. Thus five "d's," three "O's," and one "D" would mean 95. Measurements were represented by pictures of jars of different sizes. For these very practical purposes, then, man first used writing.

Original position 3000 BC	Rotated position 2800 BC	Early Babylonian 1900 B C	Sound	Meaning
			ha	fish
			gud	ox

Development of cuneiform writing. (After Cleator)

Even in the early stages, ideograms were reduced to simple strokes. A very common one meaning "sheep" was just a circle with a cross. But ideograms were limited in their usefulness: abstract concepts such as "life," the personal names of gods and rulers, and sentences that included words with grammatical endings could not be written. These problems were gradually overcome with the introduction of phonograms--the use of signs for sounds. For example, the word for "arrow" was ti, but this sound also meant "life," so the ideogram for "arrow" was adopted as a phonogram for "life." A second development was the use of determinatives, notations that specify the intended meaning of a sign which has more than one meaning. For example, when ti was intended to mean "arrow," then the sign for gish, meaning "wood," was added to it. Again, all place-names included the sign ki, meaning "earth." All names of deities included another sign, which apparently stands for "star."

As time passed and the cuneiform writing was perfected, the Sumerians wrote down their legal codes and treaties, their myths and legends, and their important historical events. As the writing ceased to be a set of easily identifiable pictures, it became necessary to establish schools for scribes; instruction in reading, writing, and arithmetic had begun.

Because the clay is imperishable, thousands of clay tablets inscribed in cuneiform have been found, and many epigraphers--scholars who specialize in deciphering and translating inscriptions on imperishable materials--have devoted their careers to reconstructing the way of life of the Sumerians. The reconstruction gets richer and fuller with time; it is no longer prehistory we are studying, but history.[4]

Mathematics: The Earth and The Heavens. Sumerians had arithmetic tables for multiplication and division, and they knew how to handle fractions. They could calculate the area of a rectangle or a right-angle triangle, so by dividing fields of irregular shape into rectangular and triangular portions and figuring the area of each portion, they had only to add the results to arrive at the total size of the field. They also solved the practical problem of estimating the volume of grain-storage facilities such as silos and pits, which had the form of truncated pyramids. For pi they got along with using a value of 3, though this must have resulted in inaccuracies which had to be corrected.

The Sumerians divided the day and the night into six two-hour periods. The night was also divided into three watches. Strangely enough, they consistently used the lunar calendar, although they knew it was necessary to add a month every so often for the years to come out correctly.

The Sumerians also named and listed many stars. Later, in the Old Babylonian Period, their findings formed the basis for the development of astrology, which treats of the influences of the stars upon human affairs. Much later, this attention to the stars resulted in continuous and careful recording of heavenly phenomena, and that paved the way for astronomy.

Government and External Affairs. Whenever a civic emergency arose in early Mesopotamia, all male citizens of the community were called together to discuss the problem and resolve it. A group of elders led this assembly and were listened to with particular respect. Exactly the same type of governmental organization existed among both the Greeks and the Romans in the early days of their political development, becoming, in Greece, the Council of Elders and Assembly, and, in Rome, the Senate and Assembly.

Each city was conceived to be the special concern of one of the gods in Mesopotamia, and in a sense the equalitarianism of government placed each man in the position of being a guardian of that god's interests. Thus the assembly was responsible for maintaining peace and harmony within the community, and dealt with violations such as murder. It also determined how to cope with threats from without, such as banditry; in the face of attack, it selected from among its number a young man to lead the defense who had military experience, fine physical endurance, and who usually came from a wealthy family. Like a censor of morality, the assembly also met to deliberate when someone committed an act of impiety against the gods.

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[4] For some fascinating stories told on the clay tablets, see History Begins at Sumer, by Samuel Noah Kramer.

This system of government persisted up to Early Dynastic times at least. Economic affairs and formal religious affairs may have been largely administered by heads of estates and their administrative assistants, but government and morality were in the hands of the people.

The Proto-Literate period saw the beginning of a kind of population explosion in Mesopotamia. Cities were growing larger, new ones were springing up, and in both cases additional land had to be irrigated and opened up for agriculture. As time went on, cities found themselves with near neighbors where there had been none before, and became involved with those neighbors in disputes over land. At the same time, the spectacle of impressive and wealthy cities was attracting the attention of nomad bandits. City walls had to be built and rebuilt. Disagreements and violence increased.

It appears that the *lugal* (king) or *ensi* (governor) came to hold power continuously, while the assembly faded into the background. Nevertheless, each city remained the province of its god, and since it was believed that the gods could settle disputes amicably among themselves, their arbitration was also sought on earth.

When city-states began to vie for power and conquer each other, the vanquishers were again conceived to have drawn their power from the gods. To wage such wars, each *lugal* or *ensi* recruited a standing army and provided it with military equipment and training. For weapons, there were pikes and battle axes of bronze and copper, also hammered copper helmets. Both two-wheeled and four-wheeled chariots were used in battle. A Sumerian bas-relief pictures soldiers lined up in phalanx formation, which indicates some disciplined fighting. Nevertheless, the outcome of a battle was ascribed to the gods.

By no means all of a city's contacts with strangers were violent. The fact that each city-state had its own specialty products had long encouraged trade; indeed, this trade was a major factor in the development of truly urban centers, for it involved an interchange of goods, people, and also ideas. As contacts among communities intensified, the trading grew more extensive. There was long-distance trade that reached as far as India to the east, Asia Minor on the north, and Egypt to the west. Apparently a group of merchants from the Indus Valley settled for a time in one of the Sumerian cities, because a Sumerian-made vase is decorated with a humped bull in front of a ceremonial manger, and both this motif and the ceremony suggested by it are typical of the Indus Valley. Some common Sumerian exports were textiles such as woolen clothing, hangings, and carpets, also tools, weapons, and jewelry; they imported such luxury articles as copper mirrors, beads, pendants, and silver girdle-clasps.

V. Gordon Childe suggests that skilled artisans moved about from city to city, settling down wherever business looked good and for as long as it looked good. On the other hand, it is probable that cities guarded their own specialties jealously, and that the producers or traders of these specialty products became a small middle class.

Religion and World-View. When we talk of world-view, we mean a man's idea about the universe--"the organization of ideas which answers to man the questions: Where am I? Among what do I move? What are my relations to these things?"[5] In every society men have a characteristic way of looking out on the universe. For the Sumerians, the universe was ruled and kept in order by the gods, but the greatest gods were themselves personifications of crucial phenomena of nature. In sum, Sumerians lived very close to nature.

In the most intimate sense, the Sumerians looked upon the world of nature, not as IT, as a world distinct from the world of man, but rather as THOU, as a world directly perceived through the emotions and closely linked with themselves. Thorkild Jacobsen gives a fine illustration of this: "'Ordinary kitchen salt is to us an inanimate substance, a mineral. To the Mesopotamian it was a fellow-being whose help might be sought if one had fallen victim to sorcery and witchcraft. The sufferer would then address it as follows:

> O Salt, created in a clean place,
> For food of gods did Enlil destine thee,
> Without thee no meal is set out in Ekur,
> Without thee god, king. lord, and prince do not
>   smell incense.
> I am so-and-so, the son of so-and-so,
> Held captive by enchantment,
> Held in fever by bewitchment,
> O Salt, break my enchantment! Loose my spell!
> Take from me the bewitchment! And as my Creator
> I shall extol thee.[6]

As for the gods who kept the universe in order, four of the seven Great Gods were Anu, Enlil, En-ki, and Ninhursaga. Anu was the highest, god of the sky, and like it majestic and powerful. As the father of the gods, Anu exercised paternal authority to maintain order among the gods and in the world. Enlil was called "Lord Storm"; he represented force, and carried out the will of the gods. We know what the violence of storms and floods could mean to the Mesopotamians, thus we understand that while Enlil was trusted because he guarded and supported the state, he was also feared because of the destruction he could bring from nature or from other men. As might be expected, the two other major gods were connected with fertility: Ninhursaga was the power in the earth, and En-ki was the power in the water. Being water, En-ki was the more active of the two; just as water might be tricky and unpredictable, En-ki represented cunning, and just as water can seem deep and unfathomable, En-ki was associated with knowledge and wisdom. In addition to the seven Great Gods, there were many lesser deities, such as gods of the cattle, the flocks, the cereals.

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[5] Robert Redfield, "The Primitive World View," in Human Nature and the Study of Society (University of Chicago Press, 1962), p. 270.

[6] Henri Frankfort et al., Before Philosophy, p. 143.

Under the leadership of Anu, all these gods deliberated in assembly to conduct the affairs of the universe:

> Questions are discussed by the members pro and con until a consensus begins to stand out; the scales are weighted for it by assent from the seven most prominent gods, among them Anu and Enlil; and thus destinies, the great coming events are shaped, are agreed to, are backed by the united wills of all the great powers of the universe, and carried into effect by Enlil. Thus functions the universe.[7]

What was man's relation to the gods? The individual should be obedient to the gods just as he should obey his father and mother, older brothers and older sisters. The latter ideal was well expressed in a hymn about a coming Golden Age:

> Days when one man is not insolent to another,
> when a son reveres his father,
> days when respect is shown in the land, when
> the lowly honor the great,
> when the younger brother . . . respects (?) his
> older brother,
> when the older child instructs the younger
> child and he (i.e., the younger) abides
> by his decisions.[8]

If a man was diligent and obedient, he could expect to be respected, to live a long life, and to become wealthy. Each man had his personal god to help him, and to whom he could talk as to a parent; through this god, a man could make his wishes and needs known to the Great Gods who were much too remote for direct communication but who might be willing to rectify his unfortunate situation. Basically, though, this remained a world in which one had to accept the dictates of the gods, and also of all the earthly authorities. Death, too, was simply accepted: a man's name would live on if he performed good deeds, but the afterworld was vaguely conceived as a place of gloom.

Such was the earliest civilization -- a number of city-states developing in the fertile but threatening valley of the Tigris and Euphrates rivers with their famed ziggurats. This was an area of busy commerce and the arena of many wars. It was one of the places where writing originated.

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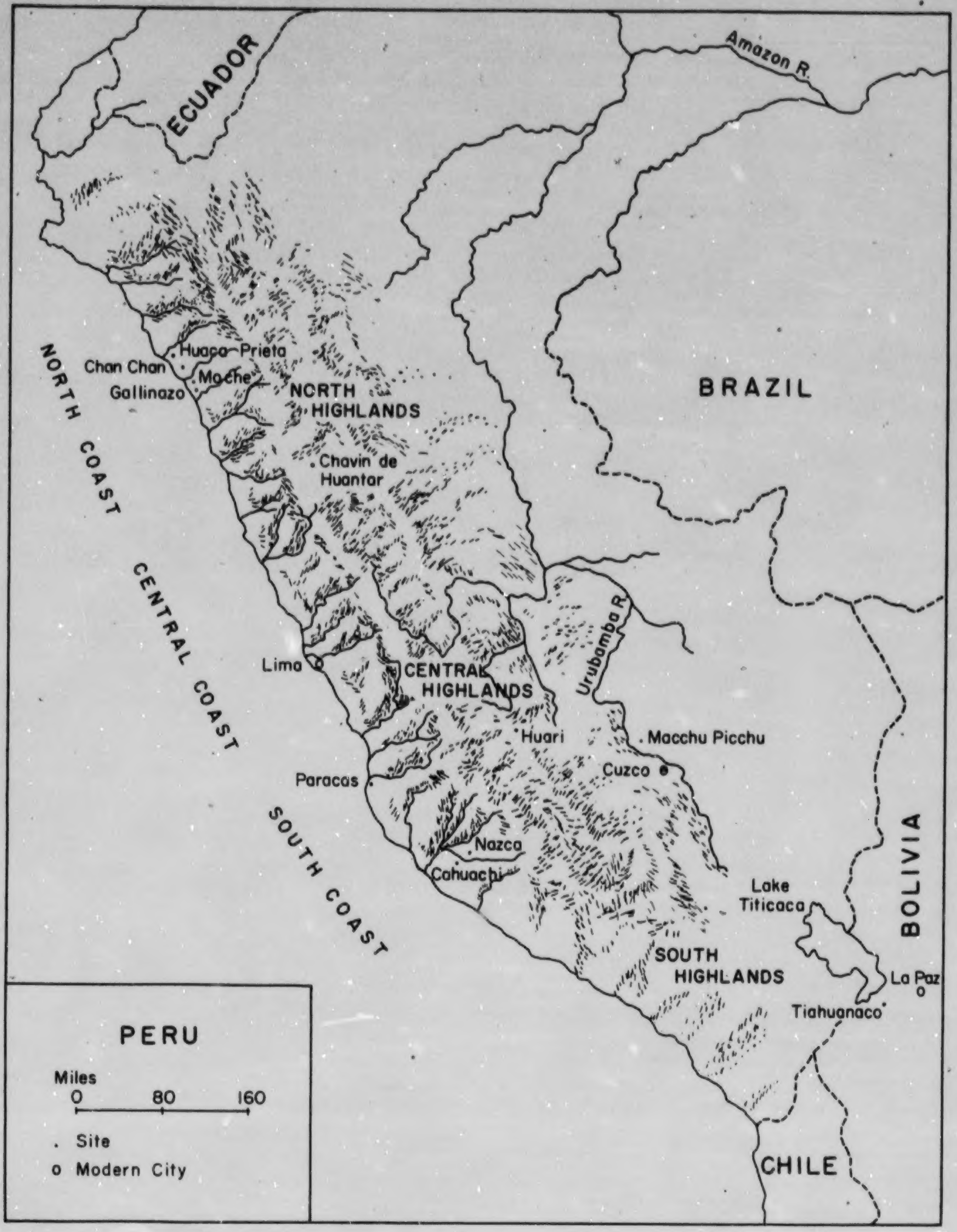
[7] Henri Frankfort et al., Before Philosophy, pp. 163-64. [8] Ibid. p. 217.


ECUADOR
Amazon R.
BRAZIL
Huaca Prieta
Chan Chan
Moche
Gallinazo
NORTH HIGHLANDS
NORTH COAST
Chavin de Huantar
CENTRAL COAST
Lima
CENTRAL HIGHLANDS
Urubamba R.
Huari
Macchu Picchu
Cuzco
Paracas
SOUTH COAST
Nazca
Cahuachi
Lake Titicaca
BOLIVIA
SOUTH HIGHLANDS
La Paz
Tiahuanaco
CHILE
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0
80
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IV

PERU: A CIVILIZATION WITHOUT WRITING

The New World and Its Differences from the Old

More than 15,000 years ago, men made their way across the Bering Strait and began the settlement of the Americas, thousands of years before either the Agricultural Revolution or the emergence of civilization took place in the Near East. And, though controversy rages as to whether, over the centuries, certain influences reached the American continents from the Pacific islands and Asia, it is generally accepted that agriculture, animal husbandry, and civilization developed independently in the New World. Wheat, barley, millet, and rice were the major domesticated plants of the Old World, but a very different trio, maize, beans and squash, dominated New World agriculture. In addition to the ever-present dog, the domesticated animals of the Americas before the Spanish Conquest were the llama, the alpaca, and the guinea pig in the Andean area of Peru, and bees and the turkey in Middle America. The wheel and the plow, such significant inventions in Old World civilizations, play no role in the New World; the wheel seems to have been used only for toys in Middle America. And instead of the plow, the digging stick was used as the planting tool. The domesticated animals of the New World were not draft animals, that is, they were not suitable for pulling carts or wagons; this may be another reason why the wheel was never developed for vehicles. With such distinctive differences, it is interesting to observe the emergence of civilization in the New World, noting the similarities and differences from the development in the Old World.

Civilization Without Writing

The comparative fullness of our understanding of Sumerian social organization and religion is the result in part, of the epigraphers' studies of the Sumerian writings -- the translation of these "documents," their interpretation, the reasoning backward in time from what the tablets say of preliterate time, to a reconstruction of the way of life of that preliterate period. Now, as we turn from the Old World to a New World civilization that never developed writing, our data are exclusively archeological and our presentation is therefore different. With the archeologist, we now work forward in time, period by period, to trace the emergence of civilization along the desert coast of Peru and in the mountainous highlands of Peru and Bolivia.

Here there evolved the amazing Inca civilization, with its highly centralized political organization and state-controlled economic system,which was conquered by the Spaniards under Pizarro in 1532. There is a well-known story that tells how the captured Inca Emperor was able to fill his prison cell with gold higher than a man could reach--a ransom worth $8,000,000--only to be betrayed and looted by Pizarro. But civilization did not burst forth full blown with the Inca Empire any more than it did in the Tigris-Euphrates valleys. The component cultures of the Inca Empire developed at different rates and also with strong regional variations.

From Desert to Snow-Capped Peaks

No early civilization developed in an area of such dramatic contrasts in physical environment as did the Inca Empire. At one extreme, there is the Atacama Desert on the Pacific Coast, for which there is no record that rain has ever fallen; at the other, there are the snow-covered peaks of the Andes, soaring to more than 20,000 feet above sea level. Despite such great contrasts, certain features of greatest importance are found throughout this area, and distinguish it from the rest of South America. Most important, in both the coastal and highland regions there is rich soil that can be easily cultivated merely with a hoe and digging stick, if the water supply is adequate.

On the coast, very little rain falls. The reason is the cold ocean current which runs along the Peruvian coast: the cool air above this current warms as it moves over the coastal land, and therefore it absorbs the moisture there, depositing it only later, in the highlands, as rain and snow. But twenty-five sizable rivers flow from the mountains across the coastal desert, returning the water to the ocean. Along these rivers there is abundant good soil, ready for cultivation when properly irrigated. The river valleys are separated from one another by deserts or mountain spurs, so that each valley is relatively isolated. The northern coast gets more rain than the southern coast and its rivers are permanent; so the north could support a larger population. In the highlands, there are five mountain basins--one as high as 12,000 feet--which are extensive enough for populous settlements. These basins are well watered by rains and also by rivers. The temperature varies from cool to cold. Some areas, such as that around Lake Titicaca, are almost treeless, but the soil is good for agriculture throughout and there is also extensive grazing land. The basins are linked by mountain passes, rarely lower than 12,000 feet, over which the Inca built their magnificent system of roads.

In the highlands, clay and stone are readily available for building; on the coast, adobe brick is a more appropriate construction material. Copper, silver, gold, and tin are generally available in the highlands, but not along the coast. Maize, which is a staple crop throughout much of the area, is replaced in the higher altitudes by quinoa and potatoes.

The effect of these different environments on archeological remains is very important. The coastal region, especially to the south, is so dry that textiles have survived in excellent condition. In the highlands, monumental stone architecture remains. Because the picture that we reconstruct is necessarily based upon the kinds of materials which have resisted decay, we know more about certain aspects of these early civilizations than we do about others.

Incipient Agriculture: 2500 B. C. - 750 B. C.

After centuries of living as hunters and gatherers, men on the north coast began to grow some domesticated plants, such as squash, chili peppers, jack-beans lima beans, and achira tubers. At Huaca Prieta this occurred about 2500 B. C. But many hundreds of years went by before these people grew most of their food. The people of this time lived close to the shore, and fish, shellfish, porpoises, and mussels formed an important part of their diet. They also gathered wild fruits and tubers.

An early form of maize was cultivated around 1400 B. C., shortly before the first pottery appears. Gourds were also grown and used as floats for fish nets, as ladles, and as containers. Nets and cordage were made from cultivated cotton. Toward the end of this period, true weaving was practiced.

During the period of incipient agriculture, the people lived in small communities in rectangular or oval dwellings of stone or adobe, often roofed with whalebone. It is of great interest that before the close of this period a temple center had already appeared--a small center, with a terrace, pyramid, and sunken court.

By 750 B. C. an improved maize had been introduced from Middle America, and agriculture was definitely established. A new and more complex culture was beginning to develop not only on the north coast but also on the central coast and in the highlands.

The description of this earliest period is thin because the archeological evidence is limited, and yet, to understand developmental processes, such periods are enormously significant. The reliable agricultural complex centered upon maize; the pottery and weaving, and the permanent dwellings represented crucial base lines for the later cultural elaborations.

Early Formative or Chavin Period: 750 B.C. - 400 B. C.

The vitality of a religious cult channeled the energy and inspired the craftsmen of the next period, which is known as Chavin. The ceremonial center was the focal point of this culture, and jaguar and serpent deities have a central place in ceramics, stone carving, and goldwork. Agriculture was still more firmly established, and warty squash, sweet manioc, and avocados had been added to the domesticated plants. The population had increased, and there was more time for activities other than just the arduous round of food-getting. Thus at certain times of the year, villagers congregated at some centrally located ceremonial center which they strove to make worthy of their deities. The design on the stone frieze from one of these ceremonial centers is characteristic of the emphasis on the feline (jaguar) and the serpent. Details of the feline god that recur either separately or together in Chavin art are: "a wide mouth band which curves up at each end; crossed fangs; rows of small, squared teeth; a circular nose; an oval eye with cutout notch at the top; and curved whisker bands."[1] And this feline motif keeps reappearing in other and later Andean cultures. This design, with its beautiful curvilinear lines, was not the work of an amateur; it was highly controlled and skilled art work.

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[1] Wendell C. Bennett, Ancient Arts of the Andes, pp. 29-30.

The people of the coastal Chavin settlements lived along the edges of the rivers just inland from the coast. Floodwater irrigation may have been practiced. Agriculture continued to be heavily supplemented by fishing. The dog and probably the llama had by now become the domesticated companions of man.

The members of the Chavin communities lived in rectangular houses of adobe bricks, with thatched gable roofs. Some had become excellent craftsmen--jewelers, potters, weavers, and creators of fine featherwork. Throughout one period after another in the Andean region, this excellence of craftsmanship is apparent. What is even more remarkable is that it was achieved with very little technical equipment. It is precisely because of this high quality of craftsmanship--probably unequaled for consistent excellence in any of the other emergent civilizations--that pottery, weaving, and metalwork loom large in this chapter.

At Chavin de Huantar, the highland site for which the period is named, there is an excellent example of a ceremonial center. The main feature of the center is a sunken court 800 feet square. Stone-faced platforms are located at the north and south ends, and on a terrace to the west stands the largest remaining structure, called the Castillo. This building is so well designed, and the construction so skillfully carried out, that an architect must have thought out the plan, and skilled masons must have labored to erect the structure. The gathering and cutting of the building stones required the labor of many people. The Castillo has three floors, and at one corner it stands forty-five feet high. A system of vertical and horizontal ventilating shafts brought fresh air into the building. Great stone slabs were used for the roof. There is further evidence of engineering skill in the walls, which are pitched inward to compensate for the height of the building. Within the Castillo are rooms, galleries, and stairways. Along the outside walls are attached (or tenoned) massive stone carvings of human heads. The main entrance to the building is reached by a stairway--an amazing piece of stone-masonry. A center of this kind means that there were available labor power, skilled specialists, and strong religious motivation.

Strewn around this site, one finds stone carvings. A number of these are fragments of a frieze which once adorned the Castillo. Gordon Willey describes the quality of this Chavin style in the following words;"(It is) a matter of line, of composition, of emphasis. It is the curvilinear forms, the massive heads, the intricately disposed snake heads, the locked and curved fangs, the claw feet, the prominent nostrils and the eccentric eyes."[2] The Chavin emphasis upon the feline and the snake has its counterpart in the jaguar and the snake in Middle America, the monstrous feline masks and the snake figures in China, and the cat and snake in Egypt. There is something about these creatures which has aroused mixed feelings in different peoples at different times, feelings of wonderment, fear, and awe--emotions both deep and contradictory.

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[2] Quoted by J A. Mason, The Ancient Civilizations of Peru, pp. 45-46.

The remains at Chavin de Huantar leave a strong inpression on those who visit them. Imagine the impact such a ceremonial center must have had on the people of the time, when all buildings were standing! The core of Chavin society was clearly theocratic--a priesthood, but without any strong political power. The great events in the life of the people were the pilgrimages to the ceremonial center.

Late Formative or Experimenter Period (400 B. C. - 1. B. C.)
A Time of Technical Advancement

While Chavin was characterized by a religious emphasis on the ceremonial center, in this next period the energies of the people were transferred to technological experimentation. Agricultural techniques definitely came to include canal irrigation on the northern coast, and terracing of mountain slopes, to provide flat fields, in the highlands. All the major domesticated plants were now part of the agricultural inventory, one of the additions being frijol beans and another quinoa, a plant of great importance in high altitudes where it is difficult to grow maize. Chicha, a beer made from corn, was widely adopted, and coca, a mild narcotic when chewed with lime, was also used. The alpaca and guinea pig joined the llama and the dog to make the full complement of domesticated animals in the Andean region. With this improvement in agriculture there was a substantial increase in population, and settlements became larger. In one tradition, the Gallinazo, house-building followed the so-called "agglutinated" pattern of placing dozens upon dozens of rooms adjacent to each other, and all facing onto a ceremonial center.

This was a time when experimentation took place also among the craft specialists. In metallurgy, gold-copper alloy became part of the metalworker's repertoire. The potters fired their products in open ovens with full oxidation, and pottery from a site called Cavernas was remarkable for the thinness that the craftsmen were able to achieve. These pots were painted, each colored area being defined by incised lines, and some were fashioned with a spout and a modeled figure joined by a bridge. The potters also produced double-spouted whistling jars: when liquid was poured from one spout, the other gave off a whistling noise. One of these is called the "mournful jar" because of the sad sound it emits. The musical instruments were clay Panpipes and bone flutes.

Along with the gains in agriculture and in animal domestication, and the technological progress in the crafts, went certain political changes. Evidence of hilltop fortifications and defensive walls tells us of more extensive warfare.

Our archeological information about the south coast of Peru begins in this Experimenter Period. Some day we may know more about the earlier periods on the south coast when the first fishing and agricultural peoples were living there. Doubtless the simple cultures of the early periods were quite the same all along the coast. But we know for certain that in the Experimenter Period, wool and other textiles were a craft specialty of the south coast. Throughout this area, textiles were used to wrap the dead. These "mummy bundles" were placed in tombs tunneled as deep as twenty-five feet into soft rock, with a vertical shaft and steps for entrance. Fifty-five of these mummy bundles, surrounded by grave goods, were found in one tomb. Concern for the proper disposal of the dead was a dominant theme in the culture of the south coast.

The dry, barren nature of the south coast reaches a high point of [illegible], desolation on the Paracas Penninsula. Here have been found the bones of an unidentified people whose life is known to us only from the goods they buried with the dead. Paracas Necropolis is a cemetery where 429 mummy bundles were found. All elderly men, their bodies were wrapped in cotton and woolen mantles, and in these bundles were placed also new articles of clothing, ornaments, weapons, pottery, and sometimes pet animals, feather fans, and ornaments of sheet gold. The mantles are among the great textiles of all time, superior in many respects to the finest European tapestries. They average four and one-half by eight feet in size, and are covered with figures of fish or bird deities embroidered in wool. The quality of these textiles reflects an excellent selection of wool, as well as highly skilled spinning of the fibers. The wool was obtained from the central and south highlands, where conditions were best for the herding and breeding of the llama and the alpaca. Among the amazing features of these mantles are the colors--up to 190 hues in a range of seven colors. One of the cloths is thirteen feet wide and eighty-four feet long, and was probably made by a group of women seated in a row and operating belt looms. These mantles for the dead must have absorbed a very large portion of time--time and labor which later in a society like Mochica, was organized for the erection of monumental structures, for example. No comparable textiles seem to have been made for the living; it was the dead, the ancestors, who deserved the finest.

Florescent Period: A. D. 1 - A. D. 800

Mochica, Nazca, and Tiahuanaco are place-names associated with the next step toward Andean civilization, a period which has received such varied names as Classic, Mastercraftsmen, and Florescent. These names indicate the nature of this period, for "Mastercraftsmen" and "Classic" both stress the remarkable maturity of the craftsmanship in ceramics, textiles, metallurgy, and architecture. Whereas in the previous period attention was directed toward experimenting with new techniques, in this period it focused on using the new techniques in highly aesthetic ways. The peak of artistic achievement reached at this time was never equaled in the Peruvian area. The term "Florescent" or "Regional Florescence" describes the total flowering of all the cultures of this time--on the north coast, the south coast, and the highlands alike.

The agricultural inventory was fully developed during the Florescent Period by the addition of domesticated potatoes and sweet potatoes, papaya, and pineapple. Fertilzer was used to improve the yield of crops. Irrigation canals had been extended, and stretched across whole valleys. In the highlands, terracing was commonplace. Such improvements made for a still more abundant food supply, and this was a time of very great increase in population. Indeed, the population in some valleys reached its pre-Conquest maximum in this period. A high degree of craft specialization was present, and trade increased. The greater concentrations of population and an increase in wealth gave rise to stronger political control in the hands, not only of the theocratic leaders, but also of military leaders. Religion, which had never ceased to be significant, became more tightly organized, with strong priesthoods. Meantime, intervalley raids developed into wars of conquest, and some of the wealth and labor force were organized to build massive structures and great public works.

Mochica: A Stratified Society

But not all of these characteristics applied to all the regions. Each region experienced its own course of development, quite different from the others. We will begin on the north coast with the Mochica culture. Since the Mochican painted realistic scenes of everyday life on their pottery, we know more about their cultures than about most other Andean groups. This is one of the ways in which archeologists benefit from particular customs of ancient peoples, and one of the reasons we have much fuller descriptions of some cultures than of others. This is an important fact to keep in mind since one can confuse limited archeological remains with a thinness of the culture itself.

The Mochicans depended almost entirely on agriculture for their food, and by now they cultivated thirty domesticated plants. Their diet was supplemented by fishing, but hunting had ceased to be important except as a sport, for the upper class, like that part of the aristocracy of England which "rides to the hounds." In order to get the greatest use of the land, they built tremendous irrigation works. The canal at La Cumbre extended for seventy-five miles, and the great earthen aqueduct at Ascope was fifty feet high and carried water across a dry valley for almost a mile. This increase in land use made possible an increase in population. People lived in adobe houses, which were rectangular in shape and had a gabled roof. Water transportation was never as important as land transportation, but still, Mochicans made rafts out of bundles of large reeds, some of which were handled by one man while others were larger and were sometimes towed by swimmers.

Mochica pottery represents an aesthetic climax. The potter was now complete master of his medium and could control the exact thickness of his pot. There were two particularly outstanding types of Mochica pottery: the amazingly realistic, modeled portrait vases, painted in red or black on a cream slip, and the stirrup, spout vases on which the Mochicans painted relistic scenes of warfare, hunting, fishing, ceremonial gatherings, and everyday events of all kinds. On these vessels the people are almost always shown in profile, and in rapid, dynamic action. The designs are extremely complex and full of vitality.

The metallurgists had also expanded their skills. They were able to do soldering, embossing, casting, and gilding, and they also knew the cire perdue, or lost wax, process of casting. Gold, silver, copper, and their alloys were all being worked, though bronze had not yet made its appearance. Goldsmiths, for example, made beautiful embossed ornaments of thin gold. Most of the metalwork was for ornament, but the Mochica, alone among the cultures of this period, turned copper into blades, digging sticks, and especially into weapons of war. The Mochica weavers were probably also turning out excellent textiles, though conditions for the preservation of textiles are poor on the north coast so the evidence is limited.

Mochica was a highly stratified society, with a strong ruling class that was able to organize the labor of large numbers of men. This is evident from the scope of the La Cumbre canal and the aqueduct at Ascope. This ruling group was an aggressive one and, later in their history, spread Mochica culture over five of the major north coast valleys. The chiefs appear to have combined religious, political, and military authority, and Mochica was a true political state. In the pottery decoration, the chiefs are shown being carried in litters, or sitting on rafts towed by swimmers. They are portrayed as sitting in arbors or sun shelters, receiving individuals who approach them with special reverential attitudes or gestures. Headdresses and insignia symbolized class and occupational distinctions, and the insignia include jaguars for people in authority; shield, mace, and darts for warriors; centipedes, birds, and dragonflies for messengers; lizards for servants; and foxes for wise men.

Warriors are a constant theme on the stirrup spout vases. The warlike nature of this society is also evident from the many pictures of prisoners. Naked prisoners are led, with a rope around the neck, while their chiefs ride in litters but are also naked and roped. These prisoners were often killed, sometimes by being hurled over precipices. Even toward their own people the rulers used very severe punishments, such as multilation, execution, and stoning.

These political authorities were able to mobilize a large labor force for the construction of public works, including temples and pyramids, the most outstanding of these being the Huaca del Sol and Huaca de la Luna at Moche. One can get some idea of the immense labor involved in such construction from the dimensions of the Huaca del Sol. The platform is 450 feet long by 750 feet wide, and it rises in three terraces to a height of 60 feet. The causeway leading to the north end is 20 feet wide and 300 feet long. At the south end of the terrace, there is a stepped pyramid 340 feet square and 75 feet high. It has been estimated that the construction required 130,000,000 adobe bricks. The Huaca de la Luna is also a step-sided platform, but lacks the pyramid. Its walls were decorated with frescoes depicting figures carrying shields, maces, and darts. This huge temple complex must have required the labor of great numbers of men, both for making adobe bricks and for transporting them to the construction site.

Mochica religion inspired a deep respect for the dead and a belief that they must be buried with articles appropriate to their station in life. The custom was to bury the dead in the desert, at the edge of the cultivated areas, in graves that were well built and lined with adobe bricks. Many ceremonial objects, which can clearly be distinguished from their utilitarian counterparts, are found in the graves.

Ceremonial occasions provided opportunities for entertainment, with dancing and music. Mochica musical instruments included shell or clay trumpets, notched flutes of bone or pottery, pottery whistles, rattles, drums, tambourines, clappers, and gongs. For the ceremonial occasions, men wore the elaborate headdresses that indicated rank or occupation, ear and nose ornaments, necklaces and rings, and probably face and body paint. These headdresses might be a representation of a bird or animal or, for warriors, a copper blade. The priests wore masks, apparently to impersonate the gods, of whom there were a great number. Prisoners might be sacrificed as part of a ceremony. Scenes on pottery tell us that ceremonies were a man's world; women seem to be totally absent from all such occasions.

That this was a more complex society than those we have observed in the previous period is quite evident. The more centralized political structure, the class stratification, the wars of conquest, and the large public works all attest to a new level of social organization.

Nazca: Textiles and Weaving

On the south coast during the Florescent Period, the class structure, aggressive warlike activity, and monumental architecture of Mochica were absent. The magnificence of the southern cultures appears in their textiles and their pottery. The major concern continued to be the proper burial of the dead.

The best known of these south coast cultures is Nazca. Though there are small pyramids and terraces in this area, they in no way compare to the architecture of Mochica. Indeed, the evidence would lead to the conclusion that this society retained a large degree of equality and lacked the authoritative leadership found in the north. Just as at Paracas Necropolis, much time was devoted to the proper preparation of the dead. Yet, whereas Paracas Necropolis is outstanding for its textiles, Nazca ranks with the very best in pottery.

Nazca pottery has two major motifs: anthropomorphic animals and deities, among which are centipede-like and feline figures, and stylized designs of birds, fish, fruit, and other objects. Each design unit is outlined in black, then beautifully colored with a wide range of hues. A design unit with wide distribution is the "trophy head," which suggests that human sacrifice and the taking of heads formed part of ceremonial life throughout the Andean region at this time. Metallurgy does not appear to have been as extensive in the north, the only metal found being gold.

Two centers of Nazca culture present further points of interest, Cahuachi, in the valley of Nazca, seems to have been a densely populated, though probably not yet urban, center. It followed the general pattern of concentration on the supernatural, and it lacks those features characteristic of Mochica--extensive irrigation, fortifications, and class differences. Another site provides an intriguing and unsolved puzzle. From an airplane, one sees a series of extensive straight lines, geometric figures, and figures of animals. It may be that they have astronomical significance, set out for the celestial deities to see. At any rate, their construction must have required very considerable labor and skill.

Tiahuanaco: A Highland Ceremonial Center

Next we move up to a Florescent period site in the south highlands of Bolivia, near Lake Titicaca, which is at an altitude of nearly 13,000 feet. This is a bleak and treeless countryside; quinoa and potatoes replace maize as major crops, and there is good grazing land for the llama and the alpaca. Tiahuanaco appears to have been a ceremonial center of the kind already described from Chavin de Huantar. It was a pilgrimage center where, at certain times of the year, great ceremonials were held. It was not an urban center, for the land could not have supported a dense population. It is most likely, then,that there were many scattered villages in the area, and that the people came from these to Tiahuanaco for special ceremonial occasions. The people must have had great respect for this religious center, since they were willing to devote considerable labor to its construction. To the site they brought large amounts of sandstone and basalt with which the skilled masons and sculptors worked.

The four major units at Tiahuanaco cover one-sixth of a square mile. One unit was a terraced pyramid 50 feet high and faced with stone. A large reservoir with an overflow canal is situated in this area. The second unit is a great square, 445 by 425 feet, rimmed by large monolithic uprights that were probably at one time parts of a wall. The gateway to this unit is reached by a stairway of enormous, magnificently laid stones, and is called the Gateway of the Sun. A remarkable piece of relief carving distinguishes the stone above this gateway. The central figure, which holds in each hand a staff with condor heads as appendages, is thought to be the creator God; six puma heads with a ring on each snout surround his head, and from his belt hang a row of faces--perhaps the recurrent trophy heads. The style is typical of Tiahuanaco relief carving, stiff and formalistic, and this is the style also of the statues found at the site, one of which is 24 feet high. Sculpture in the round was not a particular skill of these people. What they seem to have done was to take textile patterns and transfer these designs onto stone by relief carving. Yet the ceremonial center, as a whole, perhaps just because of its formalism, is a most impressive monument to the people who labored in its behalf.

The Florescent Period was an era of marked regional differences. In Mochica we observed a strong class-structured state which produced monumental architecture and engaged in wars of conquest; in Nazca, we saw a less populous, more equalitarian society, with a deep concern for the dead and with a genius expressed in pottery; and finally, in Tiahuanaco, we noted the distinction attaching to the ceremonial center. It is not clear whether true urbanization had appeared in Mochica, but Nazca and Tiahuanaco do not appear to have had even the density of population, complex social structure, or centralized political-military authority of Mochica. From the point of view of the emergence of civilization, it might be justifiable to concentrate only on the Mochica, but this would leave us with a narrow picture of the over-all development of the Andean region. Moreover, the fact is that these different cultures, notwithstanding their varied emphases in this same time-range, were all in later years absorbed into the Inca Empire.

Expansionist Period; A. D. 800- A. D. 1532

There seems to have been a time of considerable unrest in the different regions at the close of the Florescent Period; a time of mutually destructive warfare. Although this was a warring period, Tiahuanaco-style polychrome pottery, with its characteristic motifs of a puma in profile, a standing figure with staves, condor heads, and warriors, spread through most of the Andean area. The designs were usually outlined in black and painted in strong colors. The ceramics had some of the same stiffness and formalism of Tiahuanaco bas-relief, and cannot compete in aesthetic quality with those of Mochica and Nazca.

A site called Huari may have been a center from which the Tiahuanaco style of pottery spread to the coastal regions, since it is very unlikely that the influence came from the highland site of Tiahuanaco itself. The buildings, houses, subterranean chambers, and walled enclosures of Huari covered four square miles. There was certainly a large settlement there, and the walled enclosures fore-shadow the next period, when true urban centers appear.

Chimu: True Urbanization Appears: A. D. 1200 - A. D. 1450

Following the spread of Tiahuanaco culture, there was another period of strong regional development, but in this case it was marked by military expansion. Separate centers of power grew up in each coastal and highland region, the best known being that of the Chimu, on the north coast. The great city of the Chimu was Chan Chan. This city covered eight to eleven square miles, and was made up of ten units, each of which covered about forty acres and was surrounded by high walls. Within each unit, there were streets laid out in a gridiron pattern. Within each enclosure were stairways, terraces, courts, low pyramids, and reservoirs, and also many houses, which showed some class differences in their quality. Surrounding the city were irrigated fields, cemeteries, and marshlands. Some of these units were administrative centers, others were the palaces of the ruling class, and still others were the residences and workshops of specialized craftsmen. Beyond this we do not know who make up the population of a unit, although one might speculate that it was some kind of kin group. The walls that enclosed these units were wonderfully decorated with clay arabesques, which, again, were copies of textile patterns--very often designs of fish or birds. Whatever the exact nature of these different units may have been, Chan Chan was a planned, urban center. In addition, there were two kinds of towns. One type was situated to guard its irrigation canals, lest an enemy cut these off. The second type was situated within large irrigated areas and was populated largely by farmers.

Chimu civilization, which was militaristic in nature and had brought the north coast under its sway, was utilitarian in its technology. The pottery was excellently made, but had lost much of its individualistic aesthetic quality; the vessels were quite uniform and usually in one color, black. Whistling jars, mentioned earlier, were popular. Metallurgy, as might be predicted, reached a new height of technical skill. Bronze was now used, and, for the first time, casting in copper became widespread. Luxury articles such as masks, earrings, beads, earplugs, and crowns were made; breastplates and weapons of war were produced; and utilitarian objects such as picks, knives, and awls were also made of metal. Featherwork became quite common, and beautiful feather headdresses were worn, some of which have been found in the mummy bundles of the time. Adobe bricks were so well made that hundreds of years later they could be sold for ten times the price of modern bricks.

The Chimu people buried their dead in subterranean chambers, and the quantity of grave goods indicates the status of the dead. The mummy bundles had stuffed false heads, on which false faces were painted, and masks of clay, wood, or metal were also sometimes attached. However, the mummies were never embalmed as in Egypt.

Other cities like Chan Chan, though not necessarily as large, were located in many different parts of the Andean region as political centers controlling areas which had been united and conquered. Each valley had its city. This system of efficient, highly centralized, political control was one from which the Incas may have learned a great deal, and which they, in turn, used on those from whom they had learned. For example, the Chimu developed a network of intervalley roads along the coast, roads which ran between walls three feet high and which, near cities, widened out to fifteen to twenty-five feet. Intervalley irrigation canals are another indication of their successful unification of valleys under one centralized political control. But, as Gordon Willey says, "the great valley irrigation systems were highly specialized means of sustaining life, and because of this specialization they were vulnerable to attack and disruption. With the urban-type life of the later periods, the dense population centers imprisoned in narrow valley oases would have appeared as over-ripe plums to the more mobile highlanders." [3]

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[3] Quoted in Bushnell, Peru, p. 114.

Inca: A. D. 1400 - A. D. 1532

And this is exactly what happened. The Incas from the highlands around Cuzco, their capital, conquered the entire Central Andean region in a remarkably brief period and then extended their control to other areas. This was no series of raids but, rather, the conquest of an empire by an army with courage, aggressiveness, endurance, and extraordinary leaders. The empire-building by the Incas has been compared, for its speed and extent, to the conquests of Alexander the Great. To a very large degree, the Incas incorporated the existing technologies into their empire; what they added was a superb sense of political administration and a fine military machine. Their pottery was utilitarian and did not demonstrate anything like the qualities of Mochica or Nazca pottery. They did greatly extend the use of bronze, and in stone architecture they excelled both in the monumental quality of their buildings and in their astounding craftsmanship. A significant innovation of theirs was the quipu, a device for recording numbers in the decimal system, which consisted of a series of strings in which knots were tied in fixed positions to indicate units; tens, hundreds, and so on. These quipus were used for recording census figures, the size of llama herds, everything numerically complex--an absolute necessity for running the Empire. Such recording was as near to writing as the civilization of the Andes came.

The Incas built great roads across the highlands--a fantastic engineering achievement--and provided suspension bridges where necessary for highland travel. They also greatly extended terracing and irrigation, thereby opening up many new territories to maize cultivation. Their capital, Cuzco, was a true urban center.

What, then, were the particular characteristics of the cultures of the Andean area? Through the Formative and Florescent periods, the spectacular beauty of their crafts, ceramics, textiles, and metalwork strikes one most forcefully. With a remarkably limited set of tools, they achieved a quality of workmanship which many a civilization with highly elaborate technology could not equal. The strongest motivating force in these periods, up to the Florescent in the north, was religious, and the focal point for religion was the ceremonial center or the burial chambers. A change took place in the later phases of the Florescent and appeared in the Mochica culture; the state began to assume greater importance, and the role of the ruling group altered; the priestly leaders became, or were replaced by, secular leaders, who acquainted themselves with the glories of conquest. The next period, the Expansionist, accentuated the new direction, first under regional states and finally with total conquest by the Incas. The new achievements were of a different order: urban centers, amazing monumental stone architecture, engineering masterpieces and the development of an efficient and shrewdly organized political system. Where the focus had been the ceremonial center and the burial grounds, it now became the state. Each culture develops its own particular distinction and greatness.

BASIC BIBLIOGRAPHY

EMERGENCE OF CIVILIZATION

General Reference Works:

(pb - paperback; t - for teachers; S - for advanced students; s - for general student use; * - most useful)

Braidwood, R. J. Prehistoric Men, Chicago Museum of Natural History, 1959, $1.25 pb. A short (170 pp.), well-written account of man's development from prehistoric times to the appearance of civilization in the Near East. A good introduction to archeological and anthropological method and a clear discussion of stone age culture (with sections about the sequence, manufacture and use of tools) and the agricultural revolution. Highly recommended. (t, s)

Braidwood, R. J.and Willey, G. R. (eds.) Courses Toward Urban Life, Aldine Press, Chicago, 1962, $7.50. A collection of articles by leading authorities outlining the development of various areas (including the Near East, India, China, Mesoamerica, and Peru) from the basic food-gathering phases to the food-producing urban periods. A thorough but technical summary of the latest information in this field. (t)

Childe, V. G. What Happened in History, Penguin Books, Baltimore, 1954, $0.95 pb. A very good example of the art of popularization, this book discusses the changes in man's technology and outlook from paleolithic savagery to the civilization of the iron age. A cultural rather than a political history of the Near East, it provides an excellent background for the understanding of more specialized studies. (t, S)

The Epic of Man, Prentice-Hall, New York, 1961, $13.50. Although the text, written by the editors of Life, is a rather sketchy and over-simplified treatment of man's physical and cultural evolution, this book does have an undeniable visual impact. Containing a large selection of excellent color photos and a series of artists' reconstructions (sometimes of dubious quality), it succeeds in creating an unusually vivid and concrete impression of life in the ancient world. Good for the student who needs to "see a Sumerian." (s)

The Horizon Book of Lost Worlds, Doubleday, New York, 1962, $17.95. A lavish production with excellent illustrations and an interesting narration which presents much more information than The Epic of Man in a less technical manner than The Dawn of Civilization. There are chapters devoted to most of the major centers of early civilization (including the Indus Valley and Mesoamerica) with an emphasis on Egypt and Mesopotamia. More useful for a description of the culture and "way of life" than for the prehistoric development of each area. (t, s)

Howells, W. Back of History, Anchor Books, New York, 1963, $1.45 pb. A cultural history of mankind covering the Near East, Africa, Asia, and the Americas. Easier reading and of broader scope than What Happened in History, it contains a discussion of paleolithic hunters, neolithic farmers and bronze age city-dwellers, as well as chapters on the distribution of races and on the nature of human society, behavior, language, and religion. (t, s)

Piggott, S. (ed.) The Dawn of Civilization, New York, 1962, $17.95. Another magnificent production with outstanding photos and a more thoughtful series of artists' reconstructions than in The Epic of Man. There are chapters devoted to early man, to the agricultural revolution, and to each of the major centers of civilization. The text is authoritative, but allotting only ten pages to each culture tends to make it a little dry and skeletal. Perhaps the best balanced of the one-volume, pictorial surveys. (t, S, s)

Scientific American, September, 1960, Vol. 203, "The Human Species." An entire issue devoted to articles by well-known authorities on man's physical evolution, racial distribution, cultural development, and the agricultural, urban, and scientific revolutions. The contributions by Washburn, Braidwood, and Adams are most useful, but the entire issue is recommended as an interesting and not too difficult introduction to modern anthropological and archeological thought. (t, s)

Wheeler, Sir Mortimer. Archeology from the Earth, Penguin Books, Baltimore, 1961, $0.95 pb. A discussion of modern archeological principles and methods illustrated by references to various sites from Sutton-Hoo to Siyalk. A thorough and occasionally technical treatment ranging from stratigraphy to photography (there are three pages alone devoted to the proper way to remove a Roman mosaic), this book is an excellent introduction to archeology. (t, S) A shorter (120 pp.) and more popular book on the same subject is Sir Leonard Woolley's Digging Up the Past, Penguin Books, Baltimore, 1961, $0.95 pb. (s)

Basic Inexpensive Library:

Braidwood, Prehistoric Men	$ 1.25
Brainerd, The Maya Civilization	2.50
Childe, New Light on the Most Ancient East	1.95
Childe, What Happened in History	.95
Emery, Archaic Egypt	1.45
Fairservis, The Origins of Oriental Civilization	.60
Frankfort, Before Philosophy	.95
Mason, The Ancient Civilizations of Peru	1.45
Piggott, Prehistoric India	1.45
	$12.55

SUMER:

Braidwood, R. J. Prehistoric Men. (See General Reference Works list.)

Braidwood, R. J. and Willey, G. R. (eds.) Courses Toward Urban Life. (See General Reference Works list.)

*Childe, V. G. New Light on the Most Ancient East, Grove Press, New York, 1957, $1.95 pb. Written in a concise, dry manner, this book is a moderately technical archeological survey of Mesopotamia and Egypt which is documented by frequent references to previously published studies. A basic source book covering all aspects of the prehistory and early culture, it includes two chapters on the Indus valley civilization and its Mesopotamian antecedents. (t, S)

Childe, V. G. What Happened in History. (See General Reference Works list.)

Cleator, P. E. Lost Languages, Mentor Books, New York, 1962, $0.75 pb. A short (160 pp.) book which tells the exciting detective story of the discovery and decipherment of the major languages of antiquity. Devoted primarily to Egyptian hieroglyphs and Sumero-Babylonian cuneiform (but with some mention of other systems), the text includes readily comprehensible diagrams which aid in the explanation of the cryptanalysis. An interesting discussion of one aspect of the archeological record. (t, S)

The Epic of Man. (See General Reference Works list.)

*Frankfort, H., et al. Before Philosophy, Penguin Books, Baltimore, 1959, $0.95 pb. This book's subtitle, The Intellectual Adventure of Ancient Man, gives a good idea of its nature: an analysis of the Mesopotamian and Egyptian view of the universe as expressed in their myths and a discussion of the way this view was reflected in their religion, philosophy, government, and social order. An outstanding book which should be read for a basic understanding of these two civilizations. (t, S)

*Frankfort, H. The Birth of Civilization in the Near East, Anchor Books, New York, 1959, $0.95 pb. A short (140 pp.) but authoritative survey of the growth of civilization in the Near East, this book is probably the best general introduction to the area. Frankfort is interested in the individual character--in the "form"--of any one civilization, and he has an interesting chapter of comment on the failure of the theories of Spengler and Toynbee to do justice to each civilization on its own terms. Highly recommended. (t, S.)

The Horizon Book of Lost Worlds. (See General Reference Works list.)

Howells, W. Back of History. (See General Reference Works list.)

Kramer, S. N. History Begins at Sumer, Anchor Books, New York, 1959, $1.45 pb. This book contains twenty-seven chapters, each of which retells a story gathered from Babylonian clay tablets. Although these stories date from the second millenium, they make interesting supplementary reading and point out some of the recurring preoccupations of man, e.g., "The First Case of Juvenile Delinquency," "The First Case of Tax Reduction," "The First 'St. George'," etc. (t, s)

*Kramer, S. N. The Sumerians, University of Chicago Press, 1963, $7.95. A recent study by a well-known scholar which surveys and summarizes the extent of our present-day knowledge about the Sumerians. There are chapters dealing with their history, society, religion, literature, and character, based, as the numerous excerpts in the text indicate, upon the 5,000 clay tablets which form the body of Sumerian literature. Although this book deals primarily with the literate rather than the prehistoric period, it is still a most valuable and useful compendium. (t, S, s)

Kramer, S. N. (ed.) Mythologies of the Ancient World, Anchor Books, New York, 1961, $1.45 pb. A collection of 10 essays on various mythologies, this book contains chapters on Sumer, India, Egypt, China, and Mesoamerica, each of which outlines the basic myths and offers some selections from the originals. A good, short introduction to the subject which, in the case of Sumer, could be supplemented by the complete Epic of Gilgamesh, Penguin Books, Baltimore, 1960, $0.95 pb. (t, S)

Lloyd, S. The Art of the Ancient Near East, Praeger, New York, 1962, $3.95 pb. A remarkable value considering the number and quality of the illustrations, this book is perhaps the best single, inexpensive source of photos of Mesopotamian and Egyptian art. The text attempts to relate the works discussed to the general features of the culture and is not too technical. Recommended. (t, s)

Parrott, A. Sumer, Golden Press, New York, 1961, $25.00. A magnificent book, lavishly illustrated, it covers the arts of Mesopotamia from 5000 to 1000 B.C., and includes a chapter on the history of archeological discoveries in the area. Although it is mainly concerned with the art and architecture, the overwhelming presentation of the material carries one right into the heart and spirit of the civilization. (t, S, s)

Piggott, S. (ed.) Th[illegible] Dawn of Civilization. (See General Reference Works list.)

Scientific American, September, 1960, Vol. 203, "The Human Species." (See General Reference Works list.)

PERU:

Bennett, W. C. Ancient Arts of the Andes, Museum of Modern Art, New York, 1954, $6.50. A catalogue based on an exhibition at the Museum, this book is an excellent source of illustrative material. The text provides short descriptions of the major features of a number of cultures (including Chavin, Paracas, Mochica, and Nazca), along with a large selection of well-chosen photos. (t, s)

*Bennett, W. C. and Bird, J. B. Andean Culture History, American Museum of Natural History, Handbook Series No. 15, New York, 2nd and rev. ed., 1960. This book is a comprehensive, authoritative, but quite dry treatment of Peruvian cultural development. Concentrating on the periods before the Inca empire, it includes sections on the general physical and cultural setting and on ceramic, textile, and metal-working techniques. Good bibliography. (t, S)

Braidwood, R. J. and Willey, G. R. (eds.) Courses Toward Urban Life. (See General Reference Works list.)

*Bushnell, G. H. S. Peru, Praeger, New York, 1957, $6.50. This book offers a concise (120 pp.) summary of Peruvian culture from the early hunters through the Inca empire. Well written, informative, and interesting, it is one of the best available popular surveys. Excellent photos and considerable information about the various art, architecture, pottery, and textile traditions are included within the general historical framework. Highly recommended. (t, s)

Collier, D. Indian Art of the Americas, Chicago Natural History Museum, 1959, $1.00 pb. A catalogue based on an exhibition at the Museum, this pamphlet (64 pp.) has over 60 photos of representative Indian art, including about 15 pertaining to the Central Andes and about 15 pertaining to Mesoamerica. An inexpensive means of acquiring some illustrative material. (s)

The Epic of Man. (See General Reference Works list.)

Keleman, P. Medieval American Art, Macmillan, New York, rev. ed., 1956, $16.50. This book contains a 308-page section of photos which, while interesting and well reproduced, tend to be unimaginatively composed. Covers architecture, sculpture, pottery, weaving, metal-work, murals, etc., in the Mexican, Mayan, and Andean areas. The text is primarily a running caption for the accompanying plates. The twenty-page bibliography is good for specialized articles. (t, s)

Kubler, G. The Art and Architecture of Ancient America, Penguin Books, Baltimore, 1962, $16.50. A very good and comprehensive study of the architecture, sculpture, and painting of the Mexican, Mayan, and Andean civilizations. Probably the best single reference work available, it has a moderately scholarly style, very good line drawings, a large selection of photos (although not as many as Keleman), and a useful bibliography. (t, S, s)

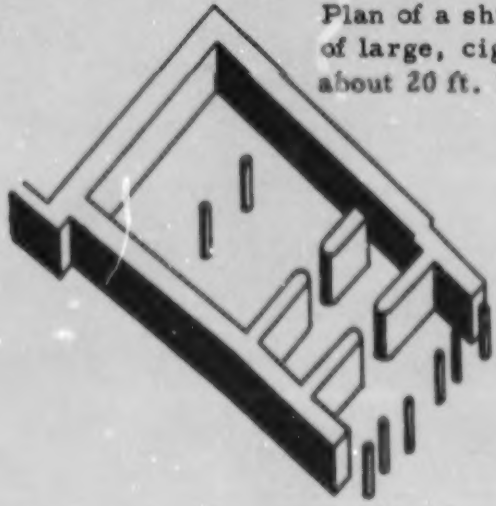
*Mason, J. A. The Ancient Civilizations of Peru, Penguin Books, Baltimore, 1957, $1.45 pb. A well-written, inexpensive book which devotes over a hundred pages to a general survey of the cultural history of Pre-Inca Peru from the Incipient to the Expansionist era. It contains a useful section on arts and crafts techniques, a discussion of the Incas themselves, a good selection of photos, and an excellent bibliography. Highly recommended. (t, S, s)

Piggott, S. (ed.) The Dawn of Civilization. (See General Reference Works list.)

Steward, J. H. and Faron, L. C. Native Peoples of South America, McGraw-Hill, New York, 1959, $8.95. A distillation of the six-volume Handbook of South American Indians, this book has a compact (50 pp.) chapter on the cultures of Pre-Inca Peru with good information on their social and economic organization. Very useful for a quick, general survey. (t, S)

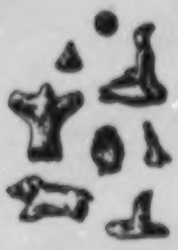
Illustrations

Mesopotamia

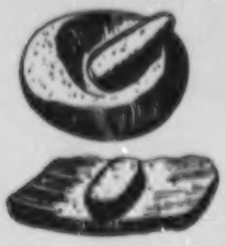


Plan of a shrine at Jericho made of large, cigar-shaped bricks; about 20 ft. by 10 ft.

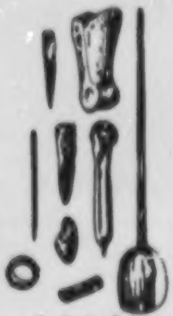
Jarmo



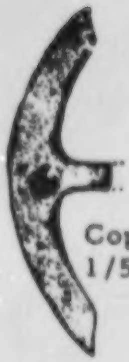
UNBAKED CLAY



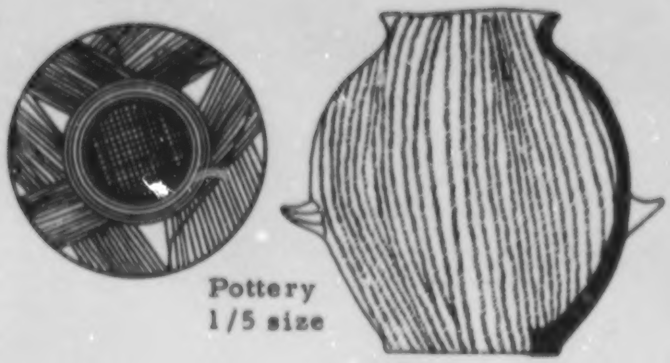
GROUND STONE



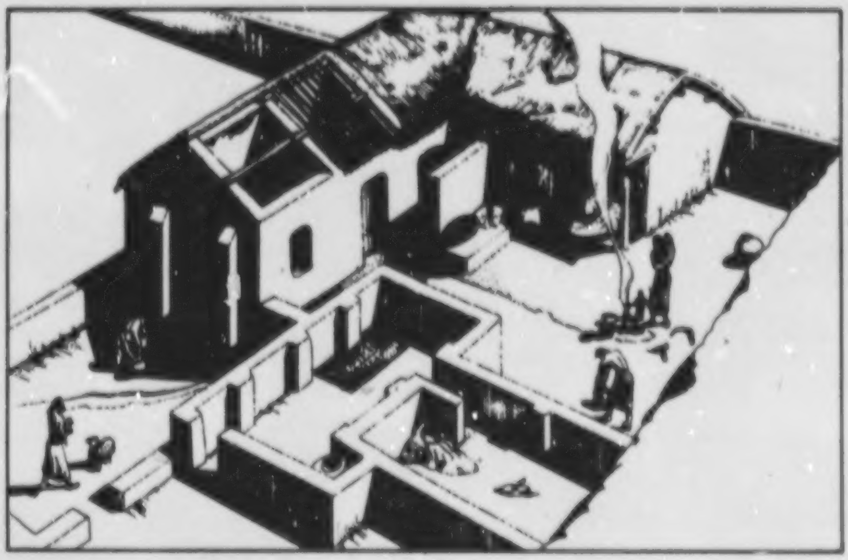
BONE



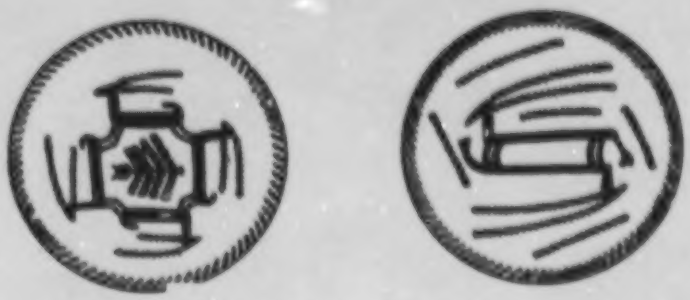
Copper weapons 1/5 size



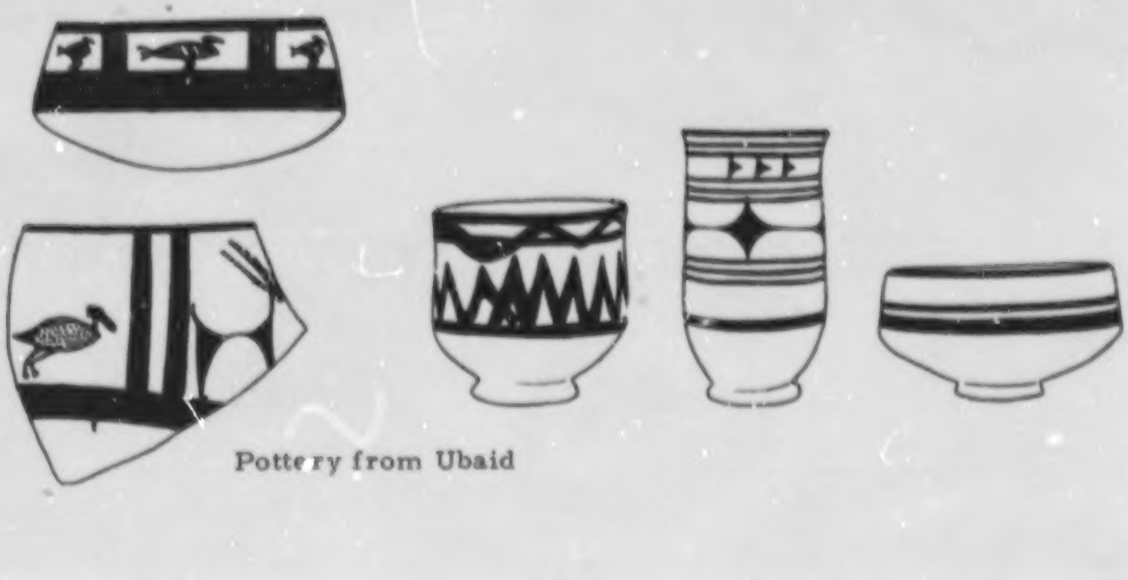
Pottery 1/5 size



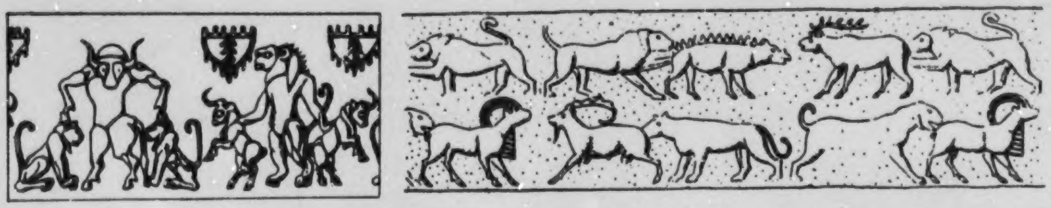
Reconstruction of a sun-dried brick farmhouse at Hassuna; storage jars and grinding stone can be seen.



Pottery from Samarra

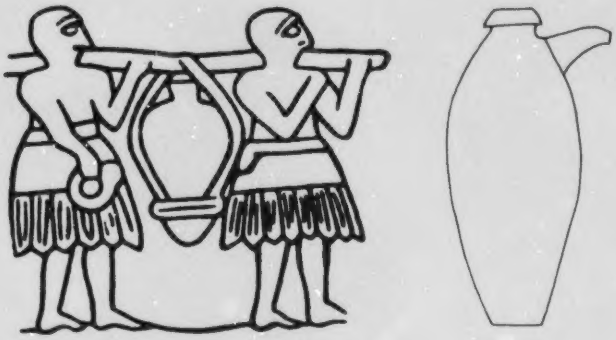


Pottery from Ubaid

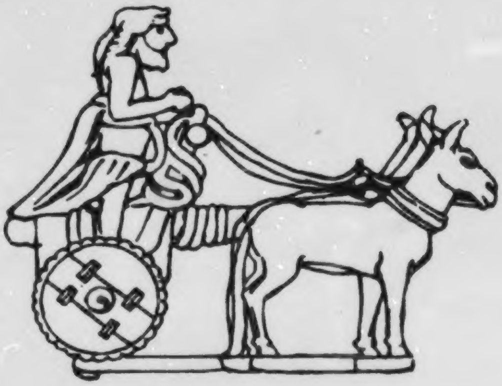


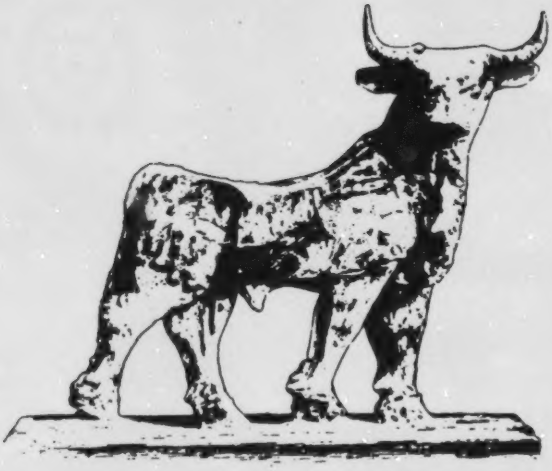
Impressions of cylinder seals—both fantastic and realistic animals

Large vessel carried on a pole by two bearers (from a Khafaje relief).



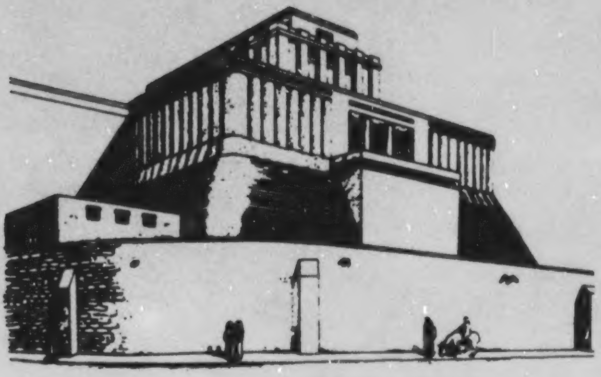
Copper mold of a chariot and four onagers harnessed abreast.





Copper bull
2 ft. high

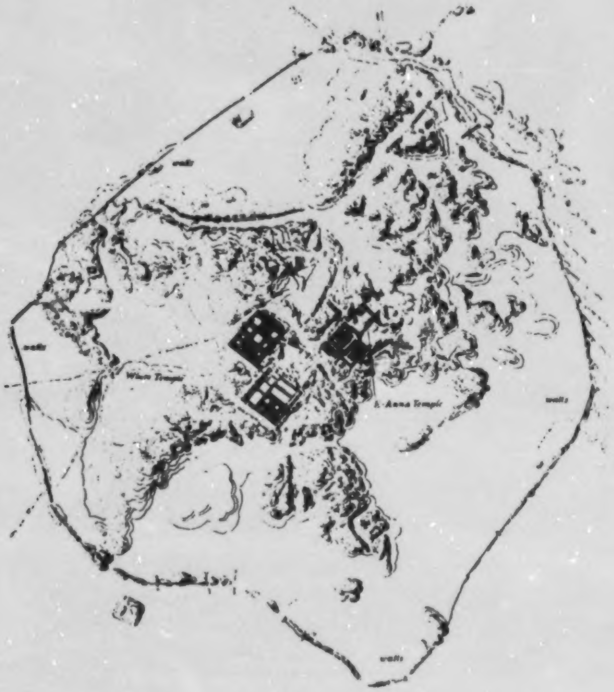
PROTO-LITERATE



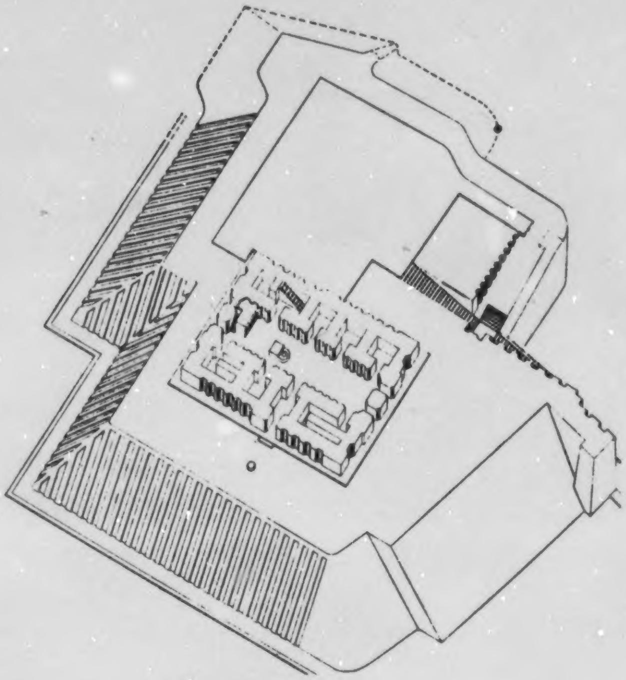
Temple at Eridu set on stone-faced platform (reconstruction).

EARLY DYNASTIC

Walled city of Uruk

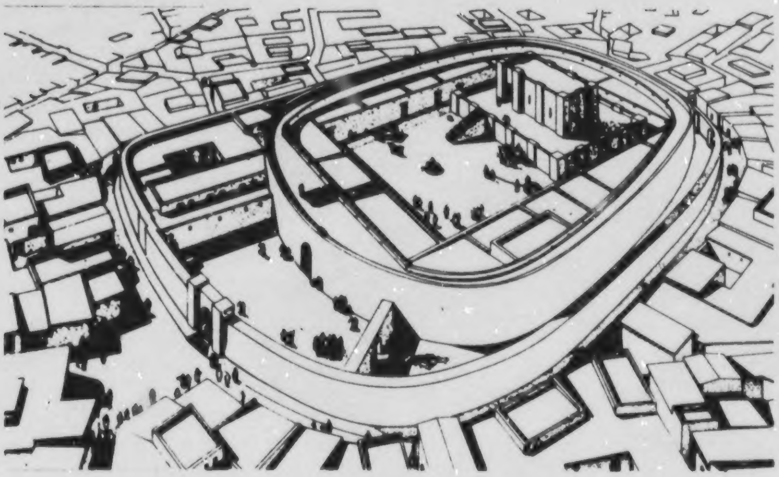

walls
White Temple
E-Anna Temple
walls
walls

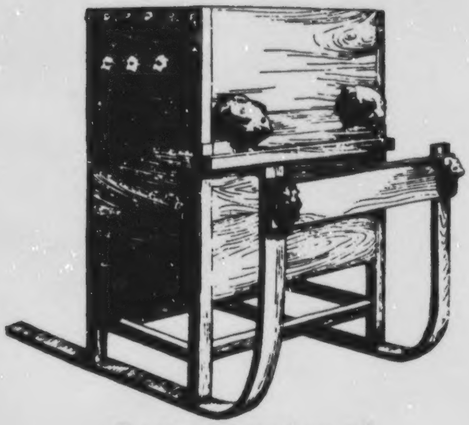
White Temple of Uruk



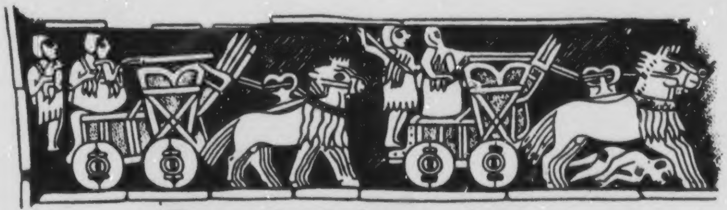
EARLY DYNASTIC

Temple oval at Khafaje

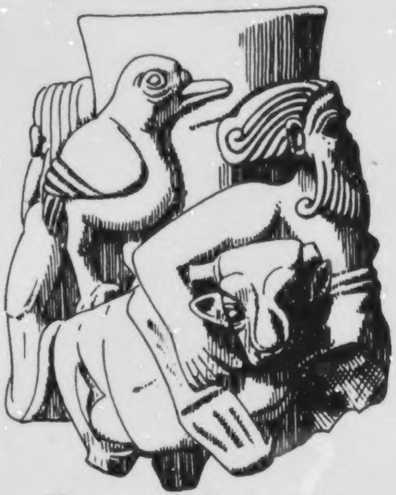




Reconstruction of
a sledge-chariot.

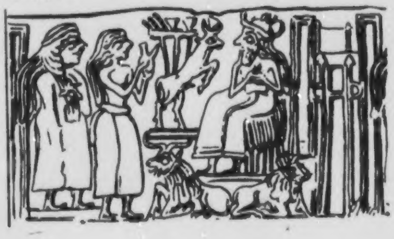


Four-wheeled war-chariots
from a mosaic at Ur.

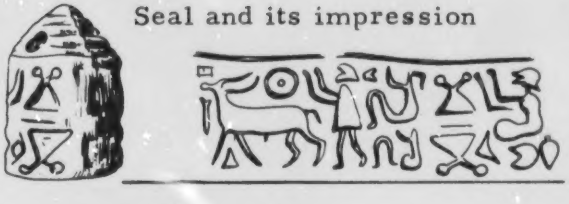


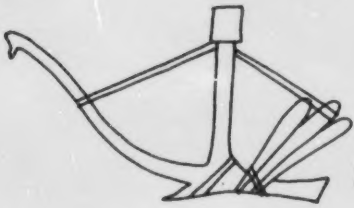
Vase with decoration
in relief of "heroes
protecting bulls".

Seal impression; spouted
vessel can be seen.



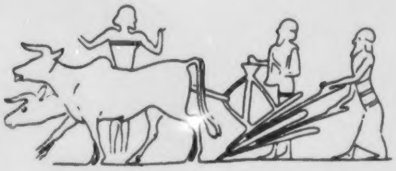
Seal and its impression





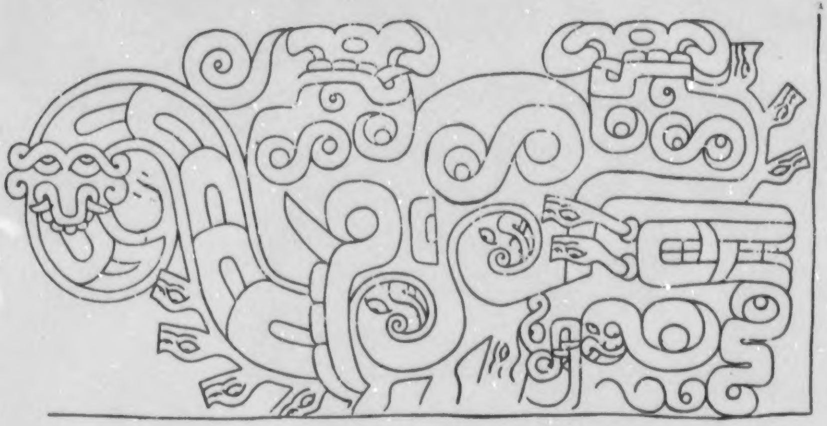
Plough

Seal impression
of a plough with
seed drill.



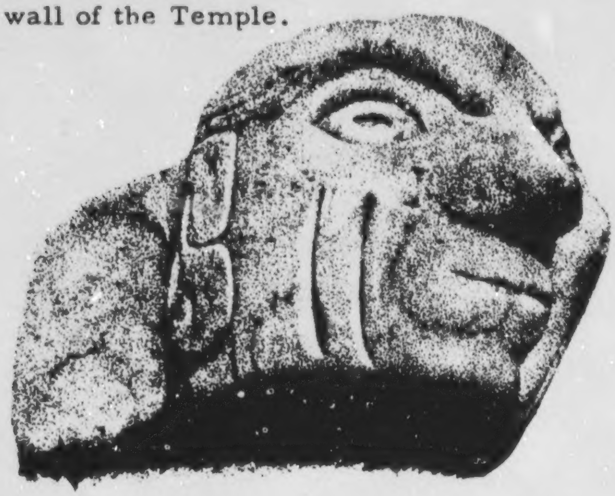
Illustrations

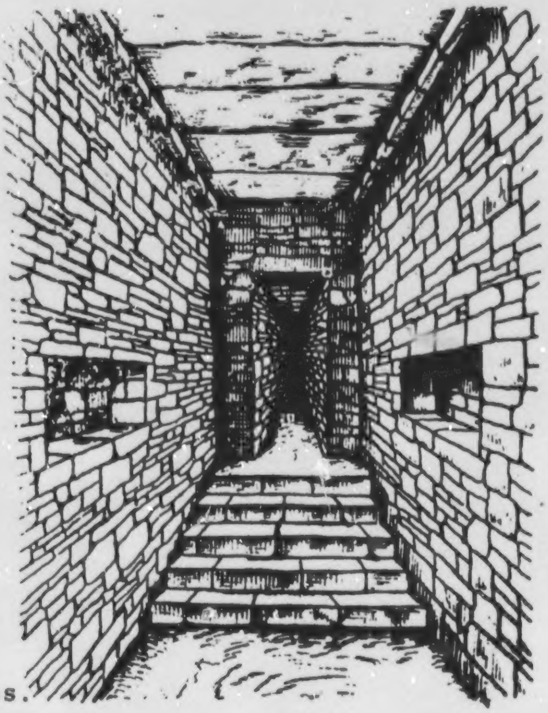
Peru



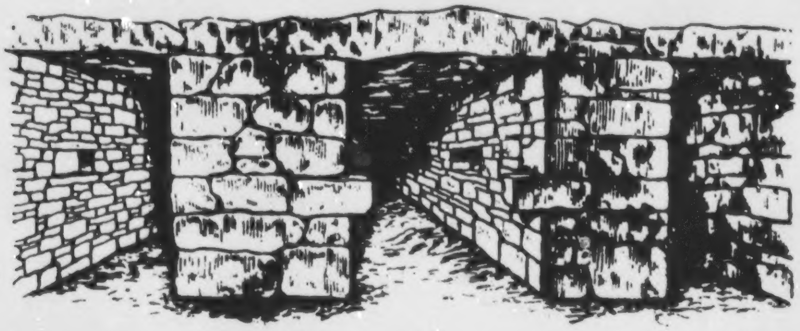
Feline god with snake head appendages. Incised design from stone freize at Chavin. Length about 3 ft.

Human head sculptured in stone. The projection at the back was inserted into the wall of the Temple.

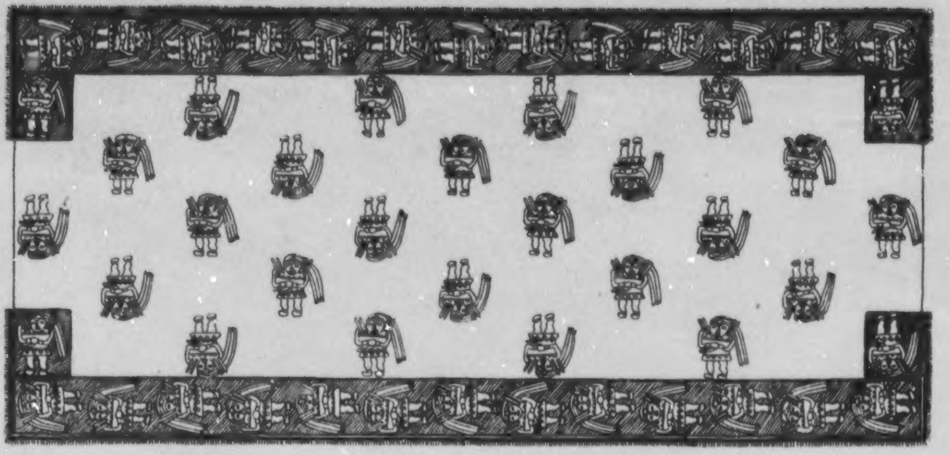


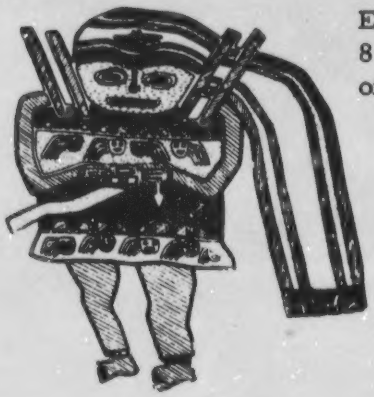


One of the interior galleries at the Temple of Chavin showing stairway and wall niches.

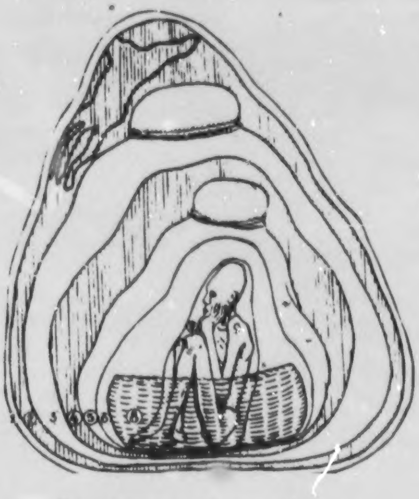


Three interior galleries of the Temple.

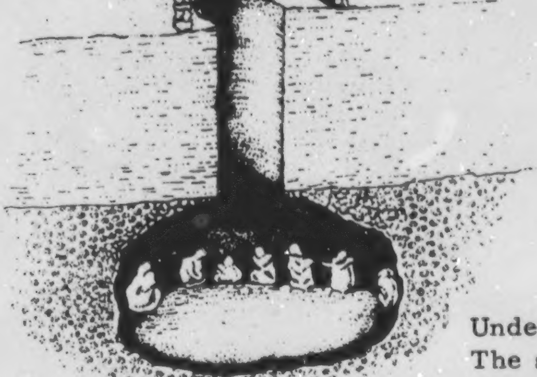




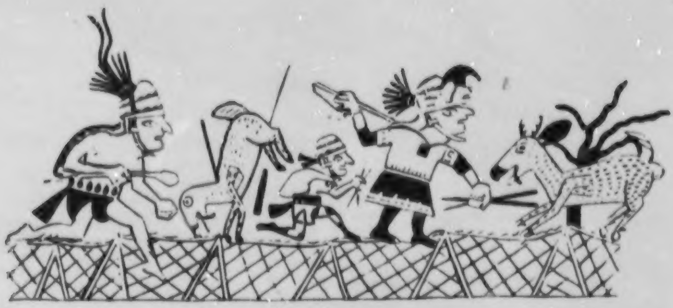
Embroidered mantle about 8 ft. by 4 ft., and detail of the repeated figure.



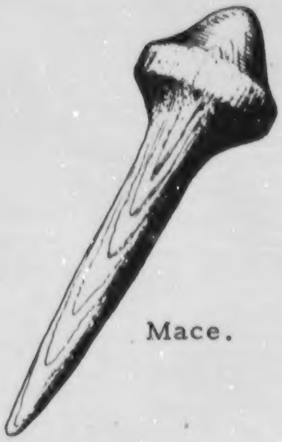
Cross-section of a mummy bundle; about 5 ft. in diameter at the base and 5 ft. in height, with 8 layers of wrappings.



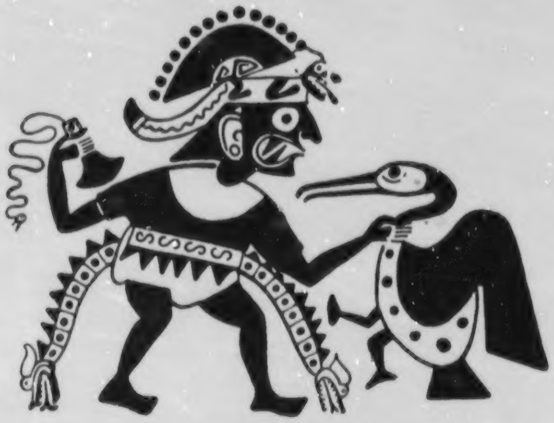
Underground tomb. The shaft is about 20 ft. deep.



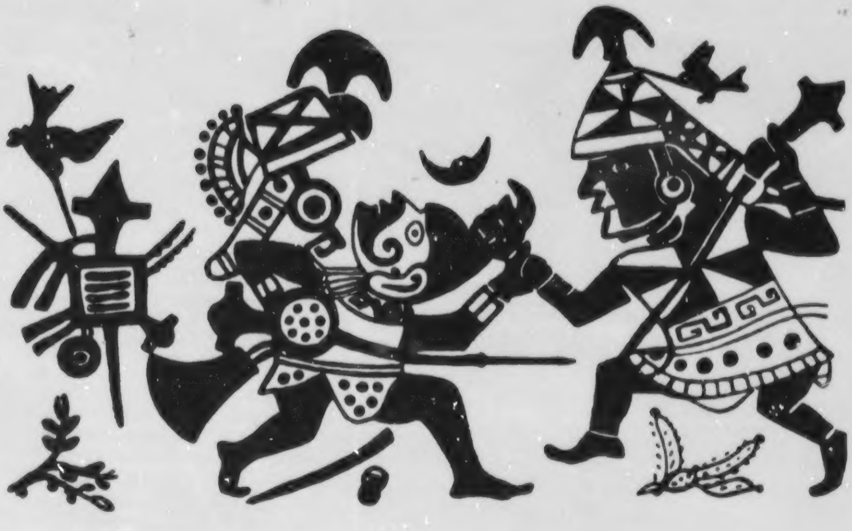
Deer hunting. The deer are driven into a net and then killed with darts and with clubs.



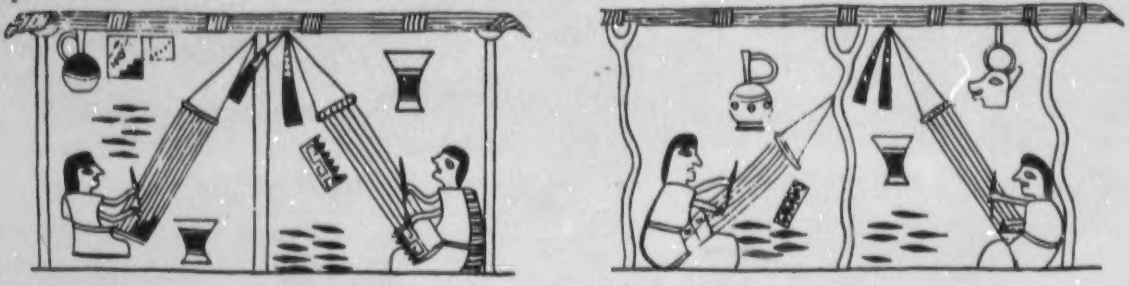
Mace.



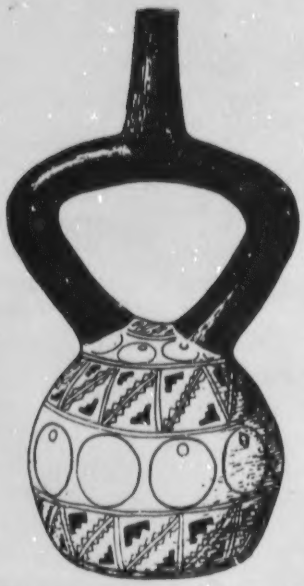
A Mochica hunter, possibly a deity, bags a bird—a pelican, perhaps. The hunter wears a cat headdress and a snake belt.



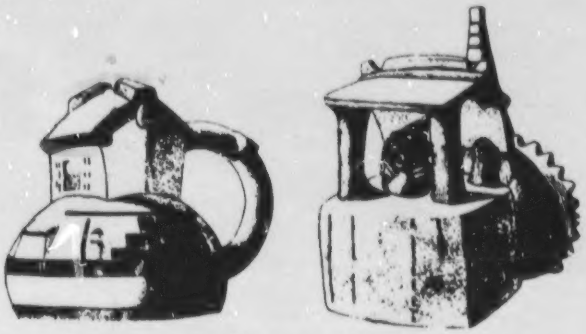
Mochica warriors. The victor has knocked off his opponent's helmet and holds him by the hair. Maces, darts and shields can be seen.



Painting on a pottery vessel showing women weaving with belt loom; also showing water jars, bobbins with the thread used in weaving, and the weaving pattern.

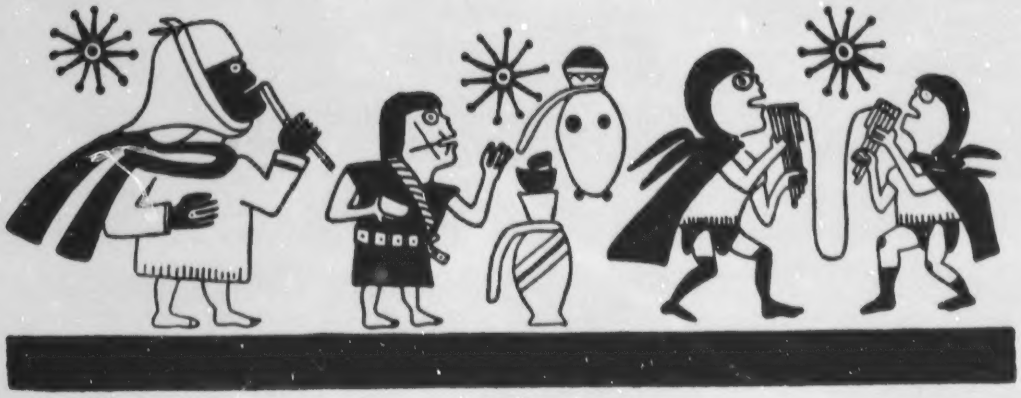


Stirrup-spouted jar with geometric design. 10 in. high.

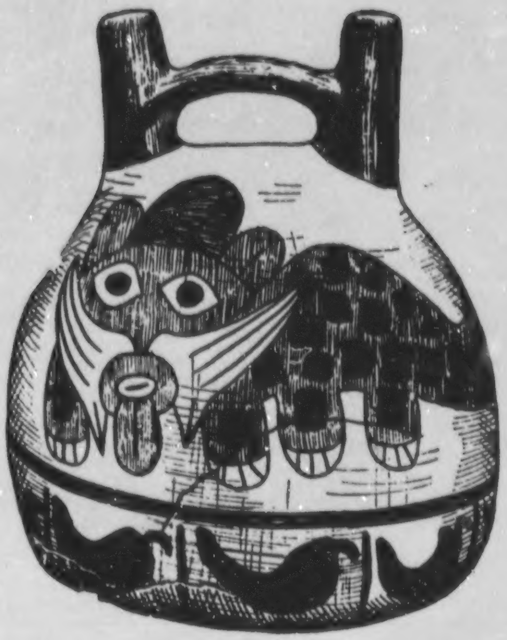


Pottery vessels showing various house styles.

Mochica musicians represented in a painting on a pottery vessel. From left to right: flute player, drummer and two drums, and two pan's pipe players.

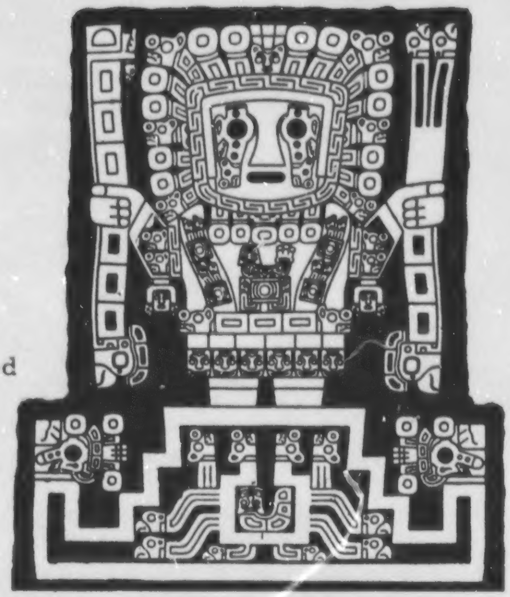


NAZCA

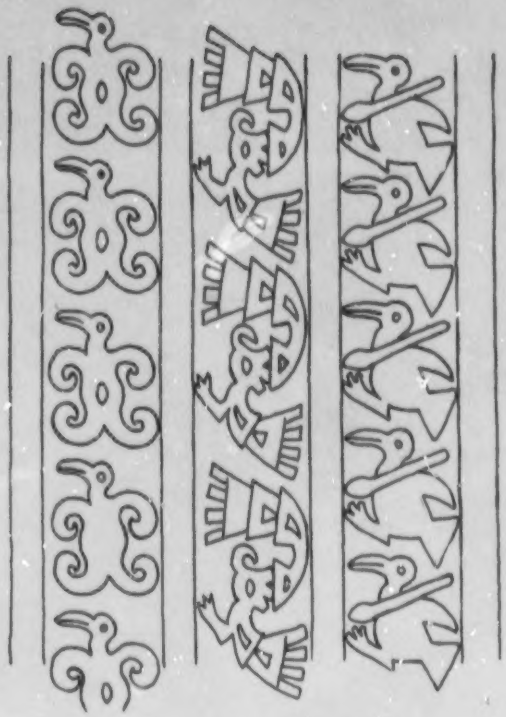


Pot with double spout
decorated with spotted cat.

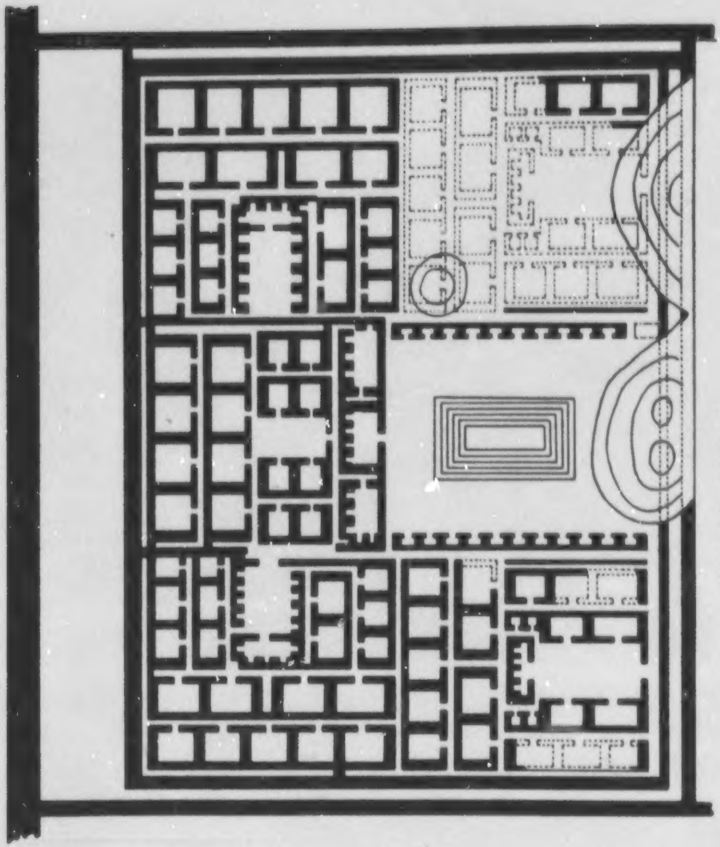
TIAHUANACO



Central figure from the monolithic doorway known as the Gate of the Sun. The figure holds in each hand a staff decorated with puma and condor heads and wears a headdress decorated with appendages ending in condor and puma heads and discs. The figure is in high relief and is about 3 ft. high.

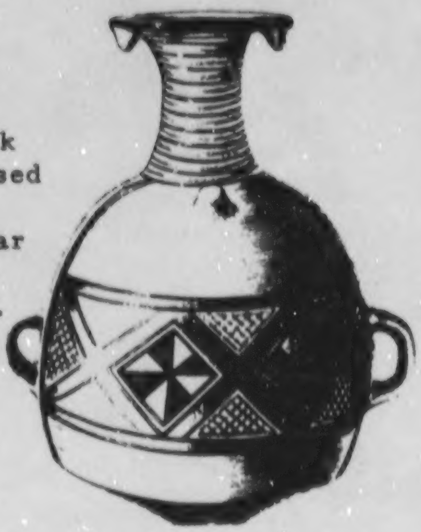


Designs in low relief on walls—pelicans and fantastic birds or fish.

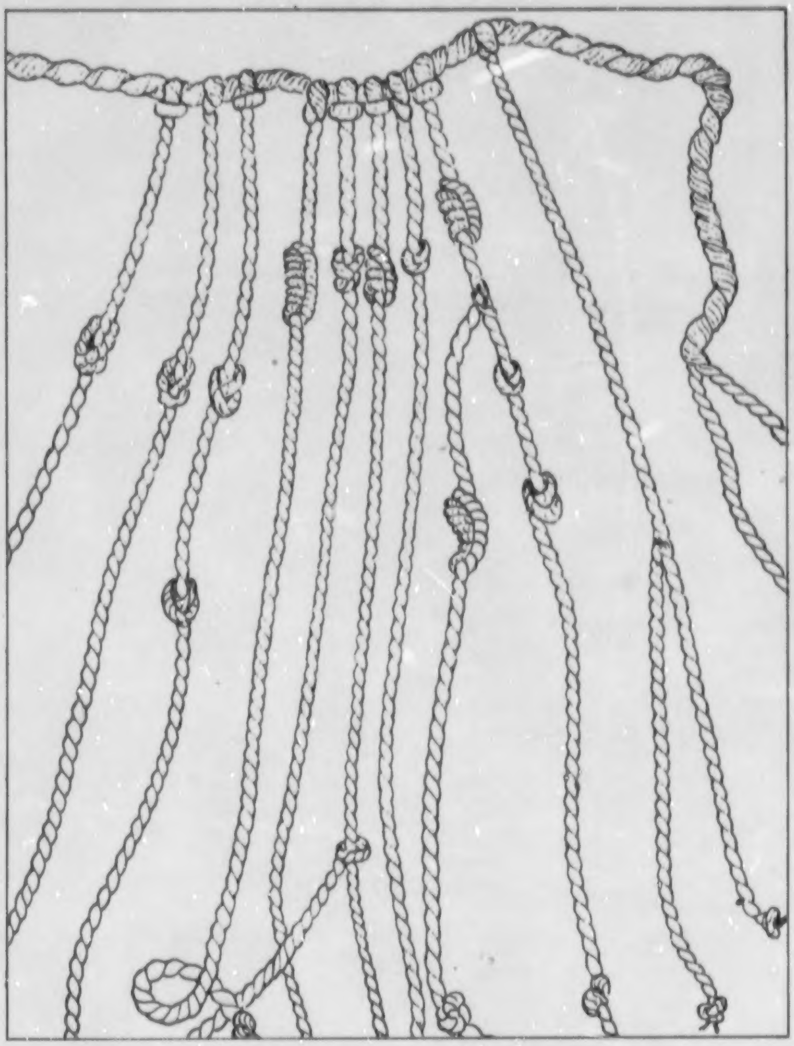


Plan of one of the many large, rectangular enclosures. The outer walls are 20 ft. high; the enclosure is about 300 ft. by 325 ft. It probably was planned as a unit.

INCA



A jar carried on the back supported by a rope passed through the handles and over the nubbin. This jar is about 10 in. high but many were much larger.



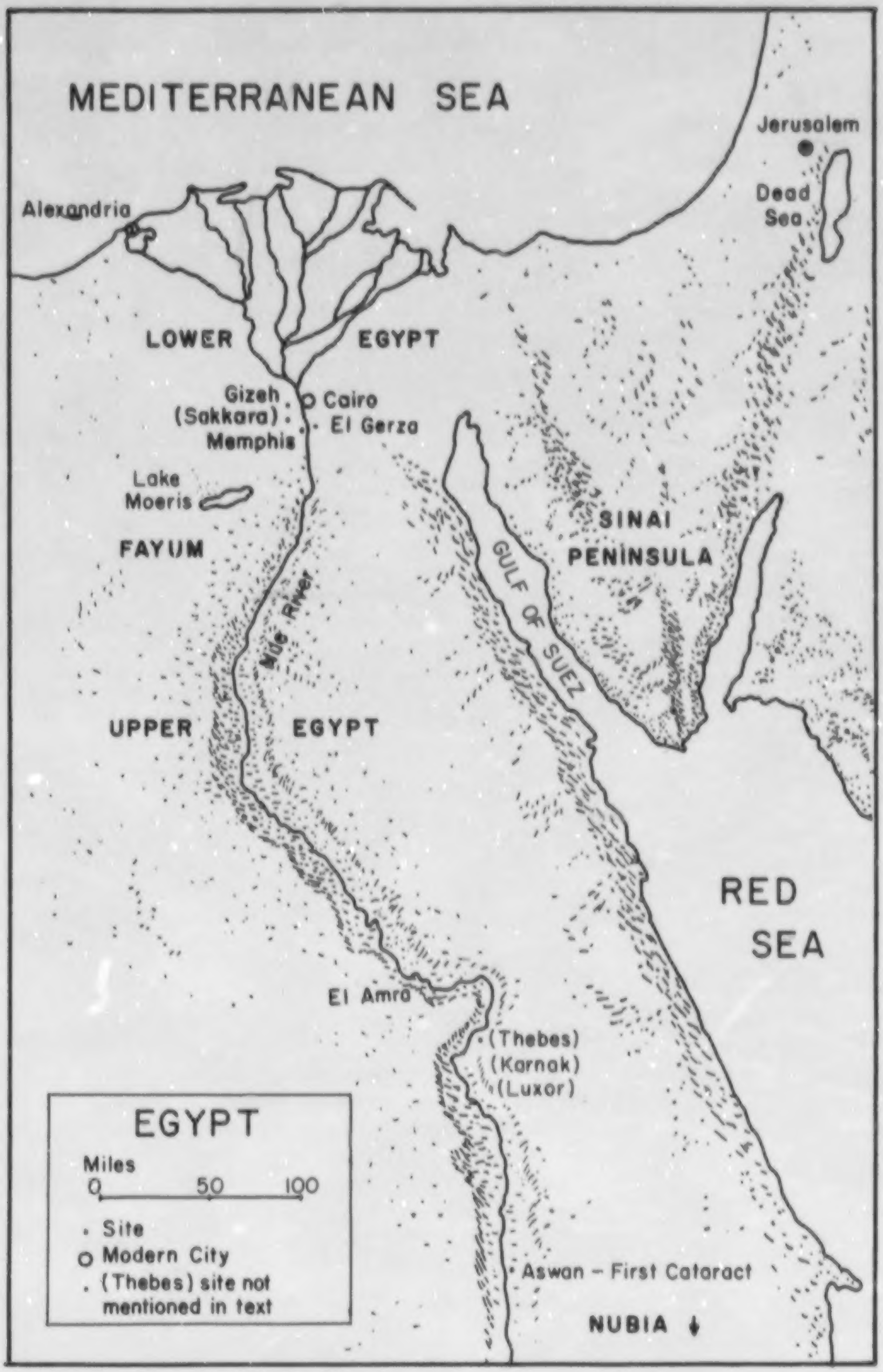
Details of a quipu. The size and position of the knots represent numbers.

Case Studies

in

The Emergence of Civilization

The Civilization of the Pyramids: Egypt


MEDITERRANEAN SEA
Jerusalem
Dead Sea
Alexandria
LOWER EGYPT
Gizeh
(Sakkara)
Memphis
Cairo
El Gerza
Lake Moeris
FAYUM
SINAI PENINSULA
GULF OF SUEZ
Nile River
UPPER EGYPT
RED SEA
El Amra
(Thebes)
(Karnak)
(Luxor)
EGYPT
Miles
0
50
100
Site
Modern City
(Thebes) site not mentioned in text
Aswan – First Cataract
NUBIA

THE CIVILIZATION OF THE PYRAMIDS: EGYPT

The Gift of the Nile

When we think of ancient civilizations, the pyramids and sphinx of Egypt are likely to come first to our minds. These have attracted tourists for centuries, from as far back in time as Herodotus of ancient Greece. They have beckoned also to the antiquarian and the archeologist, both the dilettante and the scholar. In fact, some historians of Western civilization assumed for many years that Egypt was not only the earliest civilization but also the source of influences that led to the development of all other early civilizations. For example, the early architecture of Peru and Middle America was thought to be so similar to the much earlier architecture of Egypt that it was assumed that these people of the New World had gained their knowledge of architecture from Egypt. This theory is probably not true. It seems now that Mesopotamian civilization preceded that in Egypt by more than half a millenium, and that the Egyptian transition from precivilization to civilization was influenced by Mesopotamia. We know also that civilization arose independently in the New World. In the face of such "bad news," the pyramids remain unmoved, grand and serene.

"The gift of the Nile" is what Egypt was called by Hecataeus, a Greek. This characterization was very perceptive, because it is the annual overflow of the Nile River, bearing topsoil from the mountainous south, which turns the red sands on both sides of the northerly-flowing river into fertile land. The use of this fertile land depended on the ability of the Egyptian to control the inundating waters. Just beyond the river, to east and west, all is sandy waste and hills. As John Wilson has vividly stated, "It is possible to stand with one foot on the fruitful alluvial soil and one foot on the lifeless desert sands."[1] The Nile Valley is a ribbon of green that flares out into an inverted triangle forming the delta to the north, thus the orientation of ancient Egypt was along a single south-north axis, from Upper Egypt in the south to Lower Egypt in the north. The ancient Egyptians were struck with the symmetry of the bands of green running along both banks of the one eternal river, and they reflected this sense of symmetry in their ideas and their art.

Another striking feature of the Egyptian landscape was that day after day the sun blazed across an almost cloudless sky. The daily rebirth of the sun and the yearly rebirth of the soil made a deep impression on the Egyptians. It gave them a sense of security about this world and, by analogy with the sun and the soil, the conviction that they, too, would conquer death. The sun and the river featured prominently in their religious beliefs as the sun god, Re, and the god of the Nile, Osiris. It was believed that during the hours of darkness Re sailed down a river under the earth--a river just like the Nile but oriented from west to east--to reach the position from which he rose the next morning.

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[1] John A. Wilson, The Culture of Ancient Egypt, p. 8.

The gift of the Nile, this yearly renewal of the soil, was not without its hazards. The difference of a few inches more or less in the maximum rise of the river at floodtime could mean a year of famine from lack of water or the destruction of everything in its wake when the river was higher than usual. As in Mesopotamia, men had to work hard and long to benefit from the floodwaters, and the Egyptians, too, learned the art of irrigation. Irrigation techniques differed as between Upper and Lower Egypt, for water had to be lifted up to the land of Upper Egypt, which stood higher than the Nile, while Lower Egypt was a flat jungle with hosts of little channels to be cleared. But the good seasons occurred with enough regularity to make the farmer confident, and in these good seasons he could count on two or three crops a year.

Egypt, unlike Mesopotamia, enjoyed natural protection from invaders. In the south, protection was provided by a series of cataracts in the Nile, by a bottleneck of cliffs crowding in on the Nile below the First Cataract, and by the rugged highlands stretching south of the cataracts. To the east and west, there stretched the deserts. To the north was the Mediterranean Sea, and this was dangerous in those early days of sailing ships. Even the desert of the Sinai Peninsula was an obstacle to military movement. Internally, though Upper and Lower Egypt were areas of markedly different terrain, the Nile lent them unity, providing a highway for trade and for the movement of government officials from one end of the country to the other. Thanks to nature, the Egyptian nation was free to develop and consolidate over hundreds of years--indeed, until the eighteenth century B.C.

From Village-Farming to Civilization

In Egypt the transition from village-farming to civilization occurred during approximately 5000 B.C. to 3200 B.C.--eighteen hundred years! The dates are only approximate, because we do not now have as much archeological evidence for this early period in Egypt as we have for Mesopotamia. This is true also of the Indus Valley and of the Hwang Ho Basin in China, so that in all three cases civilization seems to burst upon the scene with great suddenness. It is possible that it really did, since these three areas received influences from Mesopotamia, and the influences could have acted in each case as a catalyst for an abrupt transition to civilization. But we cannot be certain, because of lack of evidence.

At present, about the only facts we have for the Fayum Period in Egypt (5000 B.C.) are that basketry and a coarse pottery were being produced.

The archeological record gets fuller for the Amratian Period (about 3800 B.C.). By this time, the cultivation of wheat, barley, and flax had become widespread, for the cultivable land was being extended by irrigation. The grains were stored in pits lined with mats. The flax was woven into linen and increasingly turned into clothing with bone needles, though garments of animal skins were still being worn. Similarly, there was still considerable hunting of wild game, but meantime dogs, goats, sheep, cattle, geese, and pigs had been domesticated. Basketry and pottery were still produced, and the pottery was now more skillfully made and handsomely decorated. The Egyptians developed the art of making vases out of stone, which was abundantly available to them, and over the years became famous for the quality and beauty of these vases.

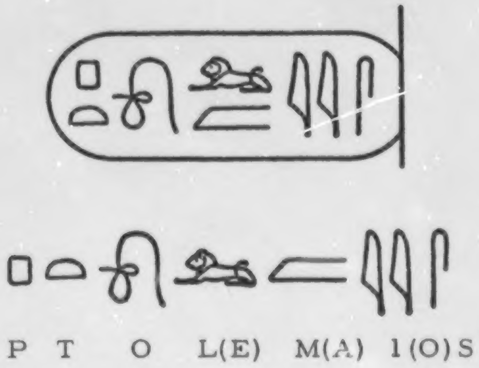
The hot, arid climate and the pitiless sun led the Egyptians to invent cleansing oils for the skin and eye paint of green malachite to protect the eyes. The eye paint was ground on slate palettes, some of which were beautifully carved and have become archeological treasures because of what they tell us of the times. Combs were made of ivory and ornamented with carved figures of goats, giraffes, and birds.

In this period we catch the first glimpse of what was later elaborated into the great pyramids: some individuals were buried with a variety of grave goods as preparation for life after death. Into the oval pits with the body were put pots, weapons, beads, palettes, and ivory figurines of women; the body itself was interred in a crouched position, ready to arise in the afterworld.

During this time, the Egyptians had gradually to clear out the thickets at the river's edge or drain the swamp lands before they could get the benefits of the good arable land. Bit by bit they enlarged the areas of cultivation. And, just as in Mesopotamia, they found that they had a rich soil to work with, so could produce more than was necessary for their daily needs and began to have a small surplus. In the Upper Nile, the next step was to gather water in catch basins from which it could be distributed through the fields; in the Delta region, the job was to clean out and direct the channels. In both cases a small community or a group of villages working together could readily handle the situation. Therefore, it would seem that in Egypt, as in Mesopotamia, large-scale irrigation did not precede and thus lead to the organization of the state, but, rather, came into existence along with the state.

The succeeding Gerzean Period (3600 B.C. - 3200 B.C.) was apparently a time of great cultural ferment, caused by contact with Mesopotamia, which was at this time in the late Proto-Literate stage. Up to this time, developments in Egypt seem to have been indigenous--that is, they had evolved without outside influence. Then rather suddenly, significant inventions and ideas reached Egypt, whether by trade or by invasion no one knows . In The Egyptians, Cyril Aldred suggests that these people acquired their knowledge of achievements in the Mesopotamian area from trips to Byblos, in Phoenicia, where they went to secure timber for building seagoing ships. He makes the point that Egypt was probably not so isolated from external contacts as has often been claimed.

Of these new ideas from Mesopotamia, the most important was the idea of writing. It was only the idea of writing that diffused to Egypt, not the cuneiform script, for the Egyptians developed for themselves a script called "hieroglyphics." Unlike cuneiform, which had evolved from pictograms to ideograms and only then to phonograms, the Egyptians used phonograms from the very beginning, to convey the sounds of unpicturable words like proper names or abstract concepts. An example in English is the word "belief," which can be represented with pictures of a bee and a leaf. The Egyptians also made early use of determinatives. For example, in cuneiform, both vowels and consonants were represented: in hieroglyphics, only consonants were rendered, but determinatives were employed to distinguish between words such as "ct" for "cat," and "ct" for "cut." Hieroglyphics were carefully and handsomely cut as inscriptions on monumental buildings, that is, for religious and ceremonial purposes. For practical purposes, the Egyptians later devised a more rapid script, called "hieratic." This was written in ink with a reed pen, on papyrus--in contrast to the Mesopotamian's reed stylus and clay tablet.



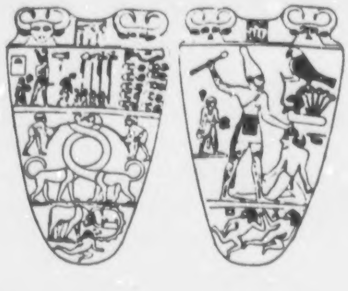
Hieroglyphic inscription and its translation.
The encirclement (cartouche) indicates a
royal name. (After Cleator)

Though no other idea or invention which came to Egypt from the Mesopotamian area was as important in the long run as writing, yet there were other items which had considerable effect. New techniques of copper-working were taken over for the manufacture of tools and weapons. Bricks were used for tombs, temples, and palaces although Egypt, unlike Mesopotamia, had an abundance of stone. The buildings had buttresses and recessed panelling, just as in Mesopotamia. It was not until the Third Dynasty (2700 B.C. - 2650 B.C.) that stone began seriously to replace brick for the tombs of kings; houses and palaces were still made of brick. The cylinder seal and a number of art motifs found their way into Egyptian life. Does this mean that Egypt would not have made the transition to civilization if it had not been for these influences from Mesopotamia? Not at all. It is only that a process already present was speeded up.

During the second half of the Gerzean Period, technological advance accelerated, and craft specialization increased. The pottery was of a very fine quality, and was painted with designs of shrines or with the emblems of deities such as plants, animals or humans, and ships. It became more common to frame doors and windows in wood. At this time also, craftsmen excelled in the working of flint. "In this mastery over material the Egyptians were already displaying that superb technical skill, particularly over intractable substances, that distinguishes their best work from that of other nations of Antiquity."[2] It is believed by some that towns grew up around craft specialists working in ivory or metal, or building ships. Trade increased on the Nile River, and also overland with the donkey as pack animal.

It was at this point that Upper Egypt won out in a political struggle with Lower Egypt and unified the whole country. From as far back in time as we can see, the basic unit of government in Egypt had been the local community, a cluster of villages around a town that was basically a ceremonial center. Each such community had its own headman and was under the protection of a deity. By Gerzean times, the communities in both Upper and Lower Egypt had been brought together under powerful leaders into numerous districts called nomes, and the nomes in Upper Egypt were then still further consolidated. Finally, the more centralized Upper Egypt overcame the more fragmented Lower Egypt, and the first great period of Egyptian civilization began. The two were to remain politically united through most of Egypt's history, though Egyptians never lost their awareness of the differences between the north and south in customs, dialects, and way of looking at life.

Two artifacts, one a palette and the other a macehead, are evidence of important events in this transition to a united kingdom. On one side of the Narmer palette, we see Narmer, king of Upper Egypt, humiliating one of the rulers in the delta region; on the other side we see him again, now as king of Lower Egypt as well, looking at a group of beheaded enemies. Narmer may not have been the first "Lord of the Two Lands"; traditionally, this honor has been accorded to Menes, though we do not know whether he was an historical figure. But the Narmer palette is clear evidence of the unification of Egypt.



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[2] Cyril W. Aldred, The Egyptians, p. 72.

And the motifs on the palette are fine examples of borrowings from Mesopotamia--the serpent-necked felines, the pairs of entwined animals, and the balance of the figures within the total design.

The macehead, called the "Scorpion" and dated at 3120 B.C., tells a different story. On this the king is shown as a god at the mouth of an irrigation canal. The scene suggests that the elaboration of irrigation techniques into a large-scale system was related to the establishment of centralized control. The irrigation system appears to have been greatly extended during the first two dynasties of the Old Kingdom,[3] when Egypt was united into a single nation.

Enter the Pharaoh

The first two dynasties of the Old Kingdom saw the consolidation of this newly united country and the firm establishment of the rule of the Pharaoh.[4] This was a time when economic advancement and stability were brought to the nation under the guidance of an ever greater political concentration.

At the top of the political pyramid was the Pharaoh, who was conceived to be the son of Re, and a god himself. As a god, he could command the allegiance of the whole nation, regardless of its former divisions. All of Egypt belonged to him. All commands came from him. In the early dynasties, he appointed to all the high offices members of his own family, who shared in his divinity.

From the beginning, the Pharaoh was actually associated with three gods: with Re, the sun god; with Horus, the falcon god, because he too was of the sky; and with the Two Ladies, the goddesses of Upper and Lower Egypt, which he ruled as one. He also had three divine attributes: "authoritative utterance or creative command; perception or understanding; justice."[5] The third of these, ma'at, can be translated not only as "justice," but also as "truth," "righteousness," or "order." It was a quality that belonged to good rule or administration, and the Pharaoh daily displayed his ma'at to the other gods, so that they would know he was ruling in accordance with the divine order.

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[3] A dynasty is a succession of kings from the same line or family. The dates of the first six Egyptian dynasties, which together formed the Old Kingdom, were: First and Second Dynasties, 3200 or 3100 to 2700 B.C.; Third Dynasty, 2700 to 2650 B.C.; Fourth Dynasty, 2650 to 2500 B.C.; Fifth Dynasty, 2500 to 2350 B.C.; Sixth Dynasty, 2350 to 2175 B.C.

[4] Though we use the term "Pharaoh" to mean the king of Egypt, it actually means "Great House" and refers to his palace. Egyptians did not refer to their king as "Pharaoh" until the fifteenth century B.C.

[5] John A. Wilson, The Culture of Ancient Egypt, p. 103.

Upon his death, the Pharaoh went to join the other gods, accompanied by a retinue and accoutrements worthy of him. In the earliest dynasties, the Pharaohs were buried in low, flat-topped structures called *mastabas*. The body of the Pharaoh was laid in a shaft below the floor, but within the main structure were numerous chambers for all the goods that were to accompany him to the afterworld. Originally, members of the royal household were killed and buried near him. For example, near Pharaoh Djer's tomb were found the remains of 275 harem ladies and 43 other members of the royal establishment. Later, statuettes and pictures on the walls took the place of these human sacrifices. Members of the Pharaoh's family also received lavish entombments, but not so lavish as that of the Pharaoh himself.

The walls of the first *mastabas* were built of brick, but by the Second Dynasty, the influence from Mesopotamia had begun to give way to a use of the indigenous stone, and the chambers were constructed of hewn and fitted limestone. It is interesting that the early craftsmen made stone appear like other material. For example, stone columns were carved to resemble bundles of mud-smeared reeds, and stone roof blocks were worked to look like palm logs.

Even the earliest pyramid, the step pyramid of King Djoser erected in the Third Dynasty, was built of stone used as brick would have been used. But then the Egyptian architects saw the possibilities in using stone facing to develop the pyramid shape, and realized how effective was the strong and massive impact of the stone itself. That was the time of the great pyramids.

The Arts and Sciences

The period of the great pyramids, the Fourth Dynasty, was a time of experimentation in art and architecture. The kingdom was politically consolidated and flourishing economically, and the Pharaoh could turn his attention to the encouragement of the arts, attracting to his court skilled and creative individuals from the length of the country.

Whereas sculptors had previously carved cylindrical figures, they now turned out cubic figures with flat planes and corners, presumably to be viewed always either full in the face or in profile. In relief sculpture and in painting, the body was twisted so that the shoulders and eyes faced front while the rest was in profile--a convention which lasted through many centuries of Egyptian art. This was the time when the peculiarly Egyptian genius in art flowered: "Each figure claimed eternal life by solidity and stolidity; by avoiding the appearance of flexibility, momentary action, or passing emotion; and by standing massive and motionless, sublimely freed from a single moment in time."[6]

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[6] John A. Wilson, *The Culture of Ancient Egypt*, p. 53.

The architectural achievements were even more notable, for from the step pyramid of Djoser to the great pyramid of Khufu was less than a hundred years. One must stand in awe of the architect, Khufuonekh, who traced on the plain of Gizeh the outlines of a pyramid 755 feet square at its base and designed to rise 481 feet in the air. This was indeed a time when men thought in daring terms. Another amazing fact is the exactitude with which these great pyramids were constructed:

> Here were six and a quarter million tons of stone, with casing blocks averaging as much as two and a half tons each; yet these casing blocks were dressed and fitted with a joint of one-fiftieth of an inch--a scrupulous nicety worthy of the jeweler's craft. Here the margin of error in the squareness of the north and south sides was 0.09 per cent and of the east and west sides, 0.03 per cent. This mighty mass of stone was set upon a dressed-rock pavement which, from opposite corners, had a deviation from a true plane of only 0.004 per cent.[7]

Rising from the flat sands of the Egyptian desert, stood the great pyramids reaching up to the heavens. Here in truth, stood a monument to the greatness of the Pharaoh in this life and a testimony to his equal greatness in the next world. In this seemingly impregnable tomb was placed the mummy of the Pharaoh because it was believed that to achieve eternal life the body must be preserved from destruction, and the needs of the individual and his ka, or soul, must be satisfied. A great labor force had to be conscripted to build these pyramids, and this the Pharaoh was powerful enough to do. The best time of year for working on the pyramid was when the Nile was high and the blocks of stone could be sent down the river. This was also the time of year when the farmers were not working on their crops, and a proportion of these farmers were conscripted each year. Since the Egyptians lacked cranes and pulleys, they moved the stones up sloping ramps to be placed in the pyramid; a mixture of sand and gypsum was used to slip the blocks into place. Ropes, sledges, and levers were used in this great enterprise. The task of organization must have been enormous--recruiting the laborers, dividing them into work gangs, providing them with food, and directing the entire operation. Though these workers might feel that by their participation in enabling the Pharaoh to move on to a glorious afterlife they too might look forward to a good, if humble, future in the next world, yet there must have been many times when the present life seemed almost unendurable, as they labored day after day under strict taskmasters.

In order to achieve such monumental architecture, the architect and the individuals on his staff had to know a great deal about mathematics, and there is evidence that they did. They had multiplication and division tables, even though to us their method of multiplication and division seems very awkward. For example, can you figure out the following system by which they multiplied 12 times 12 ?

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[7] John A. Wilson, The Culture of Ancient Egypt, p. 54.

1	12
2	24
*4	*48
*8	*96
*12	*144

They could handle fractions too, if the numerator was 1, and they also used 2/3 and 3/4. They could calculate the volume of a truncated pyramid, and for that of a cylinder they achieved a close estimate. They also could make gross estimates of the area of a rectangle or a triangle. The unit of measurement, the royal cubit, was 20.6 inches, which was the equivalent of 7 palms or 28 fingers.

It is known that the Egyptians, like the Mesopotamians, used their knowledge of mathematics for very practical purposes, such as record-keeping, estimating the sizes of fields, figuring the volume of storage space, and for construction. Because officials had to calculate the number of days between maximum levels of the Nile floodwaters, the Egyptians achieved a 365 day solar calendar. The farmers continued using the lunar calendar, which was adequate for the short-term calculations appropriate to agriculture.

The Pharaoh's Officials

As the pyramid towered above everything around it, so the godly Pharaoh towered above all men on earth. As nobles and officials surrounded the Pharaoh during life, so their tombs were grouped around the pyramid in death. By this grouping was assured their own eternal life, for they would continue to serve their Pharaoh in the afterworld.

By the Third and Fourth Dynasties, the Pharaoh was served by an effective bureaucracy. The highest official was the Vizier, who acted as chief justice, and who dispatched messengers to every part of the country to deliver the orders of the Pharaoh and to bring back information on local conditions. The Royal Sealbearer controlled the traffic along the Nile. Among the government departments were the Exchequer, the Ministry of Agriculture, and the Master of Largesse, which was responsible for all livestock. The Exchequer had branch offices with storehouses all over the kingdom, for the collection of taxes and probably also for the distribution of seed and livestock in famine years. This department was responsible for royal expeditions, too, such as those to the copper mines of Sinai or to Byblos to procure cedarwood. At the provincial level, a governor ruled each province, or nome, and below him were the mayors of towns and villages. Each of these officials carried out the orders of the Pharaoh, who alone was a god and therefore in command of everything.

To support the Pharaoh and his bureaucracy, taxes were paid with grain, hides, and gold. The government kept accurate records of the annual rise of the Nile as a basis for determining an appropriate land-tax in grain, and collectors appeared in villages and towns each harvest time to estimate the size of the local crop for taxation purposes. Taxes were levied also on the use of canals, wells, and ponds, and on market produce. Furthermore, each community had to provide men for forced labor or corvee, as in connection with the pyramids. These men were also sent on royal expeditions to do quarrying and mining, they built canals to extend the irrigation system, and they worked on the construction of new temples. Thus did the highly centralized monarchy mobilize the wealth and the labor for its tremendous public works. The public works, in turn, led to more prosperity and more national income from taxes.

Just as there was a hierarchy of officials from the Pharaoh to the mayors of villages, so was there also a social hierarchy in which the Pharaoh and his court were on top, the nobles next. Far below these two groups were the farmers who composed the overwhelming majority of the population. Between the nobles and farmers were the artists and architects, the craftsmen, the scribes, and the merchants--not a large class, but a very important one because social mobility was possible to its members. A conscientious and skillful member of this class could rise in the social hierarchy if he had the good fortune to be favored by the Pharaoh or one of his officials, one particularly successful example having been the architect Nekhebu:

> His majesty found me a common builder. His majesty conferred upon me the (successive offices of) journeyman builder, master builder, and master of the craft. (Next) his majesty conferred upon me the (successive) offices of Royal Constructor and Builder, Royal Attache, and Royal Constructor and Architect . . . . His majesty did all this because his majesty favored me so greatly.[8]

This was, no doubt, an exceptional situation, but there is sufficient evidence that opportunities did exist for some talented individuals to move out of their low positions--and without regard to race as is attested by Panehsi, a Nubian whose name means "Negro," who made his way up the ladder of officialdom.

There was one other group of great importance, the priesthood. The Pharaoh, as god-king, was at the peak of the religious hierarchy, but hundreds of temples throughout Egypt were attended solely by their priests. Some of these temples became very wealthy, and their priests powerful. In the later history of Egypt, there were times when priesthoods achieved decisive importance in the affairs of state.

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[8] John A. Wilson, The Culture of Ancient Egypt, p. 89.

The Royal City--or Was It a City?

The royal city was wherever the Pharaoh located his court. For a time, Memphis was such a city. Upon the death of one Pharaoh, his successor might choose to remain in the same city, or he might choose to move his capital elsewhere. If he did move, the former capital was abandoned to those attending the royal tombs nearby. Thus did Egyptian cities differ from those of Mesopotamia which were permanent urban centers, nuclei of commerce and industry, built around the temple complex and the palace. There were no permanent cities in Egypt until the rise of Alexandria about 300 B.C.

On the other hand, each Egyptian royal city must have been populous and very busy. Of course there were present the members of the Pharaoh's officialdom, and all those who served them such as bakers and cooks, servants and entertainers. The priests of the temples formed another sizable group. Drawn from all corners of the country were artists, sculptors, and architects, and also the court craftsmen such as potters and carpenters, goldsmiths and lapidaries, jewelers and weavers. There was also an elite group of scribes attached to the court: these were trained in schools, and we have a record of a father urging his son to become a scribe in order to avoid the hard life of a common worker. Reading and writing were for many hundreds of years confined to a small group who no doubt made the most of their monopoly.

There must have been endless comings and goings in the royal city, Vizier's messengers and the tax collectors, local officials and aspiring officials, anyone and everyone with an intent to curry the favor of the omnipotent Pharaoh. We know that traffic up and down the Nile was very heavy, the boats going downstream depending on the river current, and those going upstream hoisting sails to take advantage of the winds from the north. Always there were the merchants, attracted to the court as to a magnet, and bringing to it copper and turquoise from the Sinai Peninsula, gold from the deserts to the east, luxury goods from Nubia to the south, and cedarwood from Byblos in Phoenicia. In fact, a colony of Egyptian merchants had located in Byblos, so profitable was the trade.

There seems little doubt that each royal city was for a time densely populated and brought together a variety of peoples, encouraged the interchange of ideas, and stimulated new thinking and technological innovations. But in what sense was the royal city a city?

The Beginning of the End for the Pharaoh

By the Fifth Dynasty, and especially by the Sixth Dynasty, a process of decentralization had begun. The time of the great pyramids was over. No longer did the tombs of the nobles surround that of the Pharaoh; they now had their tombs in their own provinces. The nobles began to show a more self-sufficient spirit and dared to take action on their own. The burden on the nation of the increasingly impressive monuments, especially the pyramids, must have taxed the resources of the nation too much. The quality of art and craftwork declined at the capital, while it improved for the market of nobles outside. The Pharaoh actually seems to have courted certain priesthoods, by contracting not to require them to provide him with corvee labor. Even the Egyptians' foreign trade met with setbacks, and the Pharaoh had to send out a number of punitive expeditions because of insults to the Egyptian traders. The Egyptian temple at Byblos was burned to the ground at this time.

Civilization had declared itself proudly and boldly in Egypt for a thousand years. A time of trouble had set in.

The Spirit of Egyptian Civilization

The Egyptian of the Old Kingdom, especially of the Third and Fourth Dynasties, was a vigorous, confident, and happy individual. This appears in the tomb pictures, in the sculpture and bas-relief, and in the architecture and the literature of the period. Two of the documents which express this spirit are the Memphite Theology and the Edwin Smith Papyrus.[9]

The Memphite Theology was written to validate the claim of Memphis to be the capital, but the significance of the document is its philosophical search for a first principle. Till then, the traditional Egyptian account of Creation was that a small hillock appeared out of the watery void and was then peopled by Atum, the creator god. However, the author of the Memphite Theology goes beyond this conception and asks, "How was Atum created?" His answer is that the heart and the tongue (associated with the god Ptah) represent the first principle of creation. The heart stands for the mind, which conceived the idea of the universe and separated it into phenomena to be regulated by divine order, while the tongue carries out the commands of the mind. The inscription reads as follows:

> It is (the heart) which causes every completed (concept) to come forth and it is the tongue which announces what the heart thinks. Thus all the gods were formed.... Indeed, all the divine order came into being through what the heart thought and the tongue commanded....[10]

Here we have a new level of philosophical thought about the universe.

The Edwin Smith Papyrus is a medical document, which is remarkable for its infrequent reference to magic and its attention, instead, to objective and careful observation of the body. The importance of the heart to other parts of the body is recognized, though without understanding of the circulatory system, and it is explained that feeling a patient's pulse provides a symptom of his condition. For cases of surgery, the author recommends manual treatment, appropriate diet, rest, and medication, rather than magic spells. For cases which the author believes to be incurable, he describes, in nearly scientific terms, the development of the symptoms which lead to the patient's death. One striking case which he discusses is a patient with paralysis of one side of the body from a compound fracture of the skull, but with no breakage of the skin or bleeding; the writer makes it clear that he regards this as a physical illness, whereas we might have expected him to assert that something such as a spirit or god had entered the patient from outside.

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[9] The documents bear later dates, but internal evidence has led scholars to consider them copies of documents that date back to the Old Kingdom.

[10] John A. Wilson, The Culture of Ancient Egypt, p. 60.

Both these documents reveal a spirit of inquiry. There was intellectual excitement in the land comparable to the adventurous spirit we have already noted for architecture and the arts.

In short, the period following the emergence of civilization in Egypt was one of vigor and accomplishment. It was a time when all kinds of new things were possible, because the Pharaohs who commanded both power and wealth encouraged them. But in the later years of the Old Kingdom, experimentation and speculative thought were replaced by a patterned way of life which persisted over the centuries. A good example of this is the classical language of the Old Kingdom, which continued without significant change for two thousand years.

> . . . but Egypt was basically the same from about 2700 to about 1200 B.C. . . . The social-political essential was the assertion that Egypt was owned and ruled by a God, who assured the land of divine blessings and whose knowledge, power and oversight were complete and absolute. The spiritual essential was that Egypt was the most blessed of lands so that set-backs could only be temporary and one might be free to relish life in its simple and homely terms. That basic optimism about life in this world was soon to be extended to an optimism about the life to come as eternally blessed for all good Egyptians.[11]

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[11] John A. Wilson, The Culture of Ancient Egypt, p. 67.

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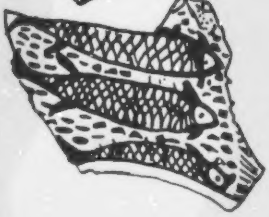


Case Studies

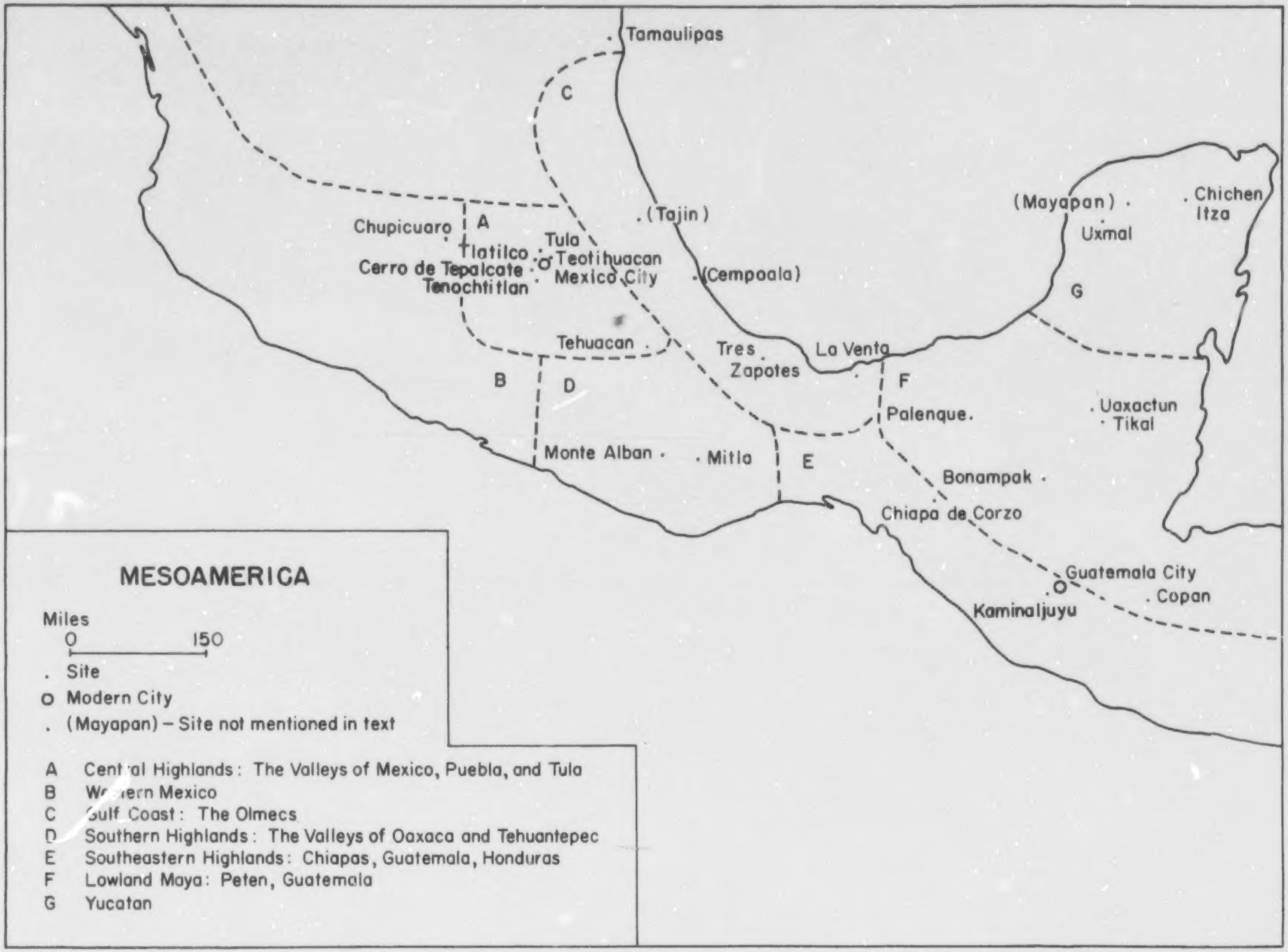
in

The Emergence of Civilization

Priests and Warriors, Builders and Sculptors, Mathematicians and Astronomers: The Civilization of Middle America

PRIESTS AND WARRIORS, BUILDERS AND SCULPTORS, MATHEMATICIANS AND ASTRONOMERS:

The Civilization of Middle America


MESOAMERICA
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. Site
O Modern City
. (Mayapan) – Site not mentioned in text
A Central Highlands: The Valleys of Mexico, Puebla, and Tula
B Western Mexico
C Gulf Coast: The Olmecs
D Southern Highlands: The Valleys of Oaxaca and Tehuantepec
E Southeastern Highlands: Chiapas, Guatemala, Honduras
F Lowland Maya: Peten, Guatemala
G Yucatan
Tamaulipas
C
(Tajin)
(Mayapan)
Chichen Itza
Uxmal
A
Chupicuaro
Tula
Tlatilco
Teotihuacan
Cerro de Tepalcate
Mexico City
Tenochtitlan
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Tehuacan
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La Venta
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Palenque
Uaxactun
Tikal
Monte Alban
Mitla
E
Bonampak
Chiapa de Corzo
Guatemala City
Kaminaljuyu
Copan

PRIESTS AND WARRIORS, BUILDERS AND SCULPTORS, MATHEMATICIANS AND ASTRONOMERS:

The Civilization of Middle America

Land of Contrasts

Mesoamerica is the name that identifies those parts of Middle America within which civilization developed: central and southern Mexico, Guatemala, Salvador, and northwestern Honduras. This is a land of contrasts--of tremendous differences in climate, topography, and vegetation. In a very short time, one can descend from the alpine climate of a high mountain, through treeless tundra, to heavily forested slopes and high, well-watered valleys, then down to hot wet jungle and coastland. In the highlands, volcanoes still erupt, and Popocatepetl, or Smoking Mountain, is a familiar sight to the people of present-day Mexico City.

It was on the Central Highlands of Mexico (see map, area A) that the greatest cities of Mesoamerica developed, especially in the Valley of Mexico. This valley covers 5000 square miles and lies 7000 feet above sea level. It has five shallow lakes, and is surrounded by mountains that formed a defensive wall and yet were broken by openings for trade in every direction. Nearby lies Tehuacan, a valley that may have been the place of the earliest domestication of plants in the New World.

To the south are the Southern Mexican Highlands (map, area D), including the Valley of Oaxaca. This valley, 5000 feet above sea level, has rather poor soil, but nevertheless contains the two important sites of Monte Alban and Mitla.

Farther south are the Southeastern Highlands, the home of the Highland Maya (map, area E), a region of cool temperatures, high basins made fertile by volcanic ash, and abundant water from both streams and a generous rainfall.

Then descending, to the northeast, one moves to the Lowland Maya area (map, area F), a deep tropical forest spotted with swamps and some grassland. It would be difficult to imagine terrain less likely to be the home of an early civilization, and yet it was here that the great ceremonial centers of the Maya grew up. Turning northward, one comes upon the dry bush of the Yucatan Peninsula (map, area G), where water flows underground and must be brought up from deep wells. This was the place of later Maya cities, of which the best known is Chichen Itza.

The coastland along the Pacific Ocean (including area B, on map) contrasts markedly with that along the Gulf of Mexico (map, area C). The Pacific coastland is very narrow; in many spots there are precipitous cliffs, and good places for settlement are not numerous. The Gulf coastland is relatively wide, in places as much as fifty miles, and it also enjoys plenty of rain. Here there grew up some important early settlements.

The people of these several regions of Mesoamerica developed different ways of life in response to their particular environments. Each of the regions had its distinctive products, such as obsidian in the Valley of Mexico, jade and the highly prized tail feathers of the quetzal bird in the Southeastern Highlands, and cacao, rubber, vanilla, and limestone in the Maya Lowlands. The variety led to widespread trading, and Mesoamerica was noted for its markets.

The Agricultural Revolution in the New World

In the New World, the Agricultural Revolution occurred over hundreds of years, as hunting and gathering people gradually added farming to their subsistence activities. What we know of their earliest domestication of plants comes from two sites of cave-dwellers--from Tamaulipas, on the northern edge of the Gulf Coast of Mesoamerica (see Chapter II), and from Tehuacan, on the southern border of the Central Highlands.

Tehuacan has been excavated only recently, and has yielded two especially important findings. First, by comparing it with Tamaulipas, it has become evident that key plants were domesticated in one or the other of these areas, but not in both. Thus pumpkins were domesticated in the north between 7000 B.C. and 6000 B.C., but did not reach the south until later. On the other hand, squash was domesticated at Tehuacan at 6000 B.C., but did not appear at Tamaulipas until 2000 B.C. Second, it appears now, from the evidence of Tehuacan in the heart of Mesoamerica, that maize, or corn, was first domesticated about 5000 B.C. This first evidence for the date of the domestication of maize is extremely interesting, for maize is by far the most important cultivated plant in the New World. It is said that in Mesoamerica today, 75% of the daily food of the people is maize, prepared in one form or another. Subsequently, different and improved varieties of maize were developed in the Mesoamerican area. Beans were also added to the diet, and provided the protein that was needed as the population increased and the proportion of game animals--that is, the meat supply--decreased.

We have no information about the origin of pottery-making in Mesoamerica, but we know that by 2500 B.C. the people of Tehuacan were producing pottery. By about 1800 B.C., they had settled down, building wattle-and-daub houses, growing and weaving cotton, and using baskets, net and cordage, and a great variety of stone tools.

The people of Mesoamerica took many centuries to proceed from the earliest domestication of plants to really settled village-farming--from about 5000 B.C. to about 1500 B.C. The Mesopotamians took only two thousand years to make the same step. Perhaps the Mesoamericans took longer because they lacked domesticated animals that could draw a plow. Perhaps it was because of the nature of the native plants that were available to them for domestication.

The Formative Period: 1500 B.C. to 100 B.C.

During fourteen hundred years after 1500 B.C., the regional peoples throughout Mesoamerica gradually enriched their ways of life. The oldest Formative settlement now known is the Chiapa de Corzo, in the Southeastern Highlands, where there is evidence from around 1500 B.C. of the compact structures of village life, loom weaving, grinding and chipping of stone tools, the modeling of female figurines in clay, and pottery-making. This pottery from Chiapa de Corzo was already far from crude.

In the Valley of Mexico, the early Formative Period farming villages lay along a great lake, Texcoco, where the people could hunt the waterfowl and also the deer in the forested hills nearby. The refuse deposits of these sites are full of clay figurines, nearly all female, which reveal the facial features, the dress, and the body-painting customs of the day. There is no indication that these represented village goddesses; more likely, they were household deities. Concern was shown for the dead, who were buried under their house floors, accompanied by pots or tools.

The most complex settlement in the Valley of Mexico, Tlatilco, yielded numerous varieties of pottery, many in the form of animals such as monkeys, rabbits, or ducks. The Tlatilco potters had also become very skillful in making bowls and jars, decorating them with color and with diverse surface textures. Burials were more elaborate, and the dead were accompanied by pottery figurines that tell much about the life of these people. For example, there are figurines of girls with body paint, men in breechcloths, dancers and acrobats, and men playing an ancient ball game that was widely popular in Mesoamerica. There are also figures of monsters, of two-headed people, and of hunchbacks. These people of Tlatilco were apparently in touch with the Olmec, who were at this same time flourishing on the Gulf Coast to the east, for some of their pottery and stone sculpture is decorated with a motif characteristic of the Olmec. This design is a curious mixture of smooth, baby-faced figures with jaguar aspects which appears human, looked at one way, and appears feline, looked at another way.

One late Formative site, northwest of the Valley of Mexico, is Chupicuaro. Here the people buried their dead with pottery of elaborate shapes and decoration, and also with the deceased's dog, presumably to help him in the afterworld. Other late Formative sites contained temple-pyramids. At first these were simple house-like structures on low platforms faced with clay, but eventually the platforms became larger and were faced with stone. At Cerro de Tepalcate, in the Valley of Mexico, there were burials under the platforms, some suggesting a custom we find abhorrent, the sacrifice of children to the gods.

Thus here, in and around the Central Highlands, a degree of complexity entered into the lives of simple village-farming communities during the Formative Period. The pottery was increasingly attractive. The dead were sent to the afterworld more richly equipped. Attention to household deities gave way to a community religion centered on temple-pyramids.

It was much the same to the south by the time of the late Formative Period. At Monte Alban, in the Southern Highlands, there was turned up evidence of large-scale architecture and of great stone carvings in low relief, called the "dancers." At Kaminaljuyu, in the Southeastern Highlands, there appeared a burial mound twenty feet high containing great quantities of grave goods such as pottery, jade articles, masks, polished-stone mirrors--a clear indication that class distinctions had become a part of the society. At Uaxactun, in the Peten area of the Lowland Maya region, there has been found a beautiful square pyramid once topped by a temple, its staircases adorned with eighteen huge masks of the jaguar god, part snake and part jaguar. This pyramid was overlaid with cream stucco, and its excavator, J. Eric S. Thompson, has spoken movingly of its radiant whiteness under the moonlight.

Yet in the meantime, during the middle Formative, a far more elaborate Olmec culture had flourished in the region of tropical rainforest and swamps on the Gulf Coast! This Olmec culture remains one of the archeological mysteries of Mesoamerica. Its beginnings are unknown, but when we first catch sight of it about 1000 B.C., it is a full-blown complex of pyramids and ceremonial platforms. The largest site, La Venta, which is located on an island two miles square, contained a pyramid that was 240 feet by 420 feet at the base, and 110 feet high. It has been estimated that 800,000 man-hours went into building this one pyramid. The Olmec were specialists in stonework, and ornamented their temples with colossal heads and with carved altars and pillars. They also made fine jade figurines and pendants, carving and drilling by means of wet sand and reeds. It seems clear that La Venta was a center where rulers and priests lived, while the masses inhabited scattered villages. Such centers probably served also as market places for the exchange of goods.

This Olmec pattern of centered civic, religious, and market life came to be taken up throughout Mesoamerica, and persisted for centuries. In addition, the Olmec seem to have influenced especially the people of the Valley of Mexico and also the Maya to their south. For example, from the Olmec site of Tres Zapotes, which survived later than La Venta, we have the earliest known New World evidence of calendrical calculations and hieroglyphic writing. These both appeared more highly developed and very well known among the Maya and the Aztecs of a later period, but the developments all seem to have rested on this Olmec foundation.

The Classic Age: 100 B.C. to A.D. 900

Out of this generally uniform cultural evolution in Mesoamerica, to which the Olmec culture forms the lone and mysterious exception, there emerged in the Classic Age a number of distinctive regional civilizations much more dependent on agriculture. The people of the Valley of Mexico, in particular, developed an ingenious system of chinampas, or "floating gardens," in their five shallow lakes--gardens which, in spite of their name, do not float but are securely rooted to the bottom of the lake. The fertility of the chinampas was regularly renewed with coatings of muddy, fertile soil scooped from the lake bottom and they were irrigated by water dipped from the lakes, so that they were very productive. Such intensive agriculture predisposed the growth of populous cities in this valley. In the tropical Lowland Maya area, on the other hand, the tangled jungle precluded intensive agriculture, and there grew up ceremonial centers surrounded by farming settlements extending over a wide area rather than thickly populated centers. The pattern, or patterns, of these Maya settlements are not fully known, but it is a constant source of amazement to visitors that people living fifteen hundred years ago could have developed in such terrain the great ceremonial centers that are now largely smothered in jungle.

The Maya: Ceremonial Centers

The Maya ceremonial center was a place for religious ceremonies, for civic functions, and for markets. All such centers typically had a ceremonial court, terraces and platforms, pyramids and temples, a number of stelae or carved pillars, and a sacred ball court. In the sacred ball court, two teams contended, using only their hips, knees, or buttocks to keep in the air a solid rubber ball the size of a bowling ball. The goal was to force the ball into the dead end of the court on the side of the opposing team. Excited crowds watched these games, and the betting ran very high. Imposing as these structures were from without, the rooms inside were damp and poorly lit, and certainly were not fit for permanent residence. Inner rooms were probably used for storage of religious paraphernalia; in other rooms, which had high platforms, the religious leader or leaders may have sat to receive those seeking favors; still others may have been occupied by priests and civic officials for fasting prior to great ceremonies. J. Eric S. Thompson recreates with vividness a ceremonial occasion at such a center:

> The uncomfortable conditions, particularly during the rainy season, would have been precisely what was required, for we know from Aztec sources that rugged conditions were a feature of these periods of preparation. One imagines a file of attendants and wives and mothers arriving each morning with drinking water and the rather meager rations for the inmates . . . and perhaps depositing them at the entrance to the ceremonial center.
>
> The time would pass, slowly no doubt, in long vigils, attending the sacred fires, drawing blood from tongues and ears for offerings to the gods, and burning much copal incense in grotesquely decorated incense burners. The market held every five days might have given a little interest to life, but surely it had to be watched from afar, for there could be no mingling with women during these periods of preparation.
>
> Then would come the big celebration, and at its conclusion, a general exodus from temple and palace back to

> everyday life. The city would lie deserted except for those who swept the courts and buildings or stored the masks and vestments, and for priests on tour of duty. Then at the next market day the city would come alive again. Buyers and sellers, their business done, would come to gaze and make their offerings at humbler shrines; persons of rank, borne in litters, would worship secludedly at the great shrines or gather for a council of state; a game of ball would be going on with many onlookers crowding to see the play; and perhaps dancers decked in fantastic masks would weave their patterns on some sunlit court to the sound of drum and flute.[1]

Tikal was one of the most elaborate of these centers. The ceremonial court alone was 400 feet by 250 feet in area. At the east and west ends of the court were huge pyramids with wide staircases leading to the temple at each summit, and on top of each temple was an imposing roof-comb--a decorative device that made a building appear to rise even higher toward the sky. On the north side of the court was a great platform supporting four smaller pyramids topped by temples; to the south were five small pyramids with temples, and a terrace, eighty feet above the level of the court, that bore a number of buildings which were apparently palaces. Beyond a ravine rose another great pyramid, and west of that was a platform, 125 feet high, that supported more buildings. There was also a sacred ball court. Building such a center must have engaged the labor of a great number of villagers over a considerable length of time, and this suggests to us the great influence that the priesthood and their religion had upon them.

But Tikal was only one of a great number of centers. Another one, Palenque, was located in the foothills of a great mountain range, and was distinguished for the beauty of its stone sculpture and stuccoed bas-reliefs. Also, at this site a stream was diverted to flow through an underground aqueduct constructed of a corbeled vault broad enough for four men to march through abreast. The corbeled vault, a type of arch that was invented by the Maya, is built up by placing blocks of stone one upon another so that each layer projects inward slightly more than the one below, until the two sides are close enough so that a capstone can be placed on top. They faced a serious engineering problem in building these arches; for if the weight of the materials was not properly distributed, the arch would collapse. A particularly exciting discovery at Palenque was the burial vault of a chief, sixty feet under one of the temples, which was decorated with nine stucco reliefs of gods. The chief, lying in a large stone sarcophagus with a skillfully carved lid, was richly attired, and wore numerous jade ornaments, a mosaic mask of jade, and a delicate pear-shaped pearl over an inch long.

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[1] J. Eric S. Thompson, The Rise and Fall of Maya Civilization, pp. 60-61.

At Copan, where it is thought Mayan astronomers may have met to determine the times of eclipses of the sun, an outstanding architectural feature was a great hieroglyphic stairway of sixty-three steps rising to a height of eighty-six feet. The riser of each step was covered with glyphs a foot high carved in relief. On the stairway at intervals were five beautifully carved figures of seated gods, six feet high, and on each side of the stairway was a ramp carved with celestial birds and serpent monsters. Copan also had a magnificent ball court, with sculptured markers on the playing floor, and trios of stone parrot heads on the walls.

At Uxmal, on the Yucatan Peninsula, there was a quite different type of building, erroneously called the "Nunnery" because it resembled Catholic nunneries in Europe. This took the shape of a quadrangle, and was entered through a vaulted gateway. The courtyard in the center was one and one-half times the size of a football field. The north side of the quadrangle was two stories high; the second story was approached by a flight of stairs, and there were four rooms on each side of the stairs. The ornamentation on these buildings was particularly fine, and included masks of rain-dragons, a lattice pattern modeled on the appearance of the scales of a serpent, and two-headed snakes extended into a horizontal pattern.

All areas of the Maya ceremonial centers were decorated with sculpture in relief or in the round. It was of the greatest importance to the artists that gods or priests be shown with as accurate a portrayal of their key attributes as possible, thus they might take an entire third of a panel for a head because of the symbolic value of the headdress. Balance was an important aspect of their composition, and they might insert glyphs, for example, to achieve this. Over and over again, the subject matter was an important priest or chief attending some religious rite or vanquishing an enemy. Other common motifs were serpents, birds, or the water lily, often in quite abstract patterns. Artists also did exquisite jade carving, and at Tikal there have been found a few remaining examples of excellent woodcarvings. Whereas the carving on stelae is traditional, orderly, and dignified, having an "aristocratic refinement and elegance,"[2] murals that were uncovered at Bonampak show a quite different side of Maya art. These demonstrate a fine sense of complex composition, a greater looseness in the drawing combined with certainty of line, and a sophisticated sense of color. The murals depict subjects such as noblemen being entertained by musicians and actors, a violent battle in the jungle, the final victory, and a great festival. In the victory scene a victim, seated on the steps, has fainted or died; it is a masterpiece of realistic drawing combined with esthetic sensitivity.

The great intellectual achievements of the Maya included their hieroglyphic writing, mathematics, astronomy, and a calendric system. All of these were developed in the interests of their religious beliefs.

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[2] Miguel Covarrubias, Indian Art of Mexico and Central America, p. 227.

Over a thousand Maya hieroglyphic monuments have been found, and all have to do with the passage of time. This is because the people believed in astrology, as the priests taught them--that is, that days and years and cycles of years exercised favorable or unfavorable influences upon men which could be predicted and therefore appropriately dealt with. Time was believed to be carried on the backs of bearer-gods, so that the god of a particular month, for example, was relieved of his burden when the next month began. Each day was considered to be divine and under the aegis of two gods, so that each day combined a number and a name. Then, when the month position was added, there resulted 18,980 different combinations of the three variables, each representing a particular combination of influences. Absorbed in making these astrological forecasts, the priests became expert astronomers, calculating the length of the solar year with astonishing accuracy and discovering how to make the proper correction for leap years. They also had an accurate set of tables on solar eclipses. They determined the length of a year on the planet Venus, and were able to synchronize Venus years with their solar years so that they erred by only 0.08 days out of 481 years. They used two calendars: in one, the year was composed of 260 days, and, in the other, eighteen months of 20 days plus five unlucky days, 365 in all. Every fifty-two years of 365 days, the two calendars coincided, and this period of time was called a "Calendar Round." All these observations and calculations required great skill and patience and the cooperation of priests throughout the region and over many generations. Three Maya codices, or written documents full of astronomical details, have been preserved, and there is no doubt that the priests as a whole did record, compare, and correct their findings.

To achieve these results, they had to be able to handle numbers well, and this they could do. One of their accomplishments was the cipher (nought) standing for completion, not zero. Another was a system of place numeration based on twenty, not on ten as with us, with the numbers arranged vertically rather than horizontally. That they could handle large numbers is evident from two stelae on which there are time calculations going back 40,000,000 and 90,000,000 years.

Still another achievement was the invention of hieroglyphic writing, also for the purpose of religio-calendrical recording. Their glyphs consisted of ideograms and phonograms: for example, xoc, the symbol for "water," also stood for fish, and xoc also meant "to count" because the sound of this verb was the same as the sound for "water." Mayan words had prefixes and affixes, and the affixes were often included as a detail of the major glyph. Probably they were in part phonetic, also. Mayan hieroglyphics are extremely difficult to decipher, but from the ones so far read it is clear that they record the passage of time, the names and influences of the gods of each division of time, and dynasty lists.

It is interesting to contemplate the tremendous intellectual energy that went into these achievements of the Maya, all to determine and to cope with the magical influence of time. And the priests, by means of their lore, were able to exercise control over the people.

The Valley of Mexico: Teotihuacan

While the Maya developed ceremonial centers in the lowlands during the Classic Age, there arose in the Valley of Mexico a great city, Teotihuacan. This city, called "The Place of the Gods," was over seven square miles in area, and dominated the countryside to a radius of 100 miles. It was a planned city, with a major street sixty yards wide called the "Avenue of the Dead," along which were the homes of the wealthy, plazas, and great pyramids. The greatest of these pyramids, dedicated to the sun, was 689 feet square at the base and 210 feet high, and at the time of its glory was completely covered with cut-stone facing and stucco. Moreover, it is thought that it was built, not in stages, but as one continuous operation. Other great structures on the Avenue of the Dead included the Pyramid of the Moon, and also the Temple of Quetzalcoatl with its rows of stone-carved plumed serpents with feline fangs and ears, flanking squarish figures of some deity, perhaps the jaguar, which has a large snout with two fangs. This temple later became one part of a great ceremonial plaza called the "Citadel": the plaza, covering 38 acres, was enclosed by high stone walls so thick that small pyramids could be built on them. A great statue found at Teotihuacan, the "Water Goddess," is eight feet tall and carved out of a single block of basalt. This human figure is depicted by means of geometric shapes. The art work at the peak of Teotihuacan culture has been described as "austere and distinguished, gay and graceful, and intensely religious."[3]

Teotihuacan pottery was of very high quality: a beautiful four-color pottery was an important article of trade, and an orange ware was famous for its eggshell thinness. Specialists who worked in jade and porphyry created beautiful masks and carved figures. Indeed, Teotihuacan was the center of a widespread trade, importing shells from both coasts, mica, cotton, and the beautiful feathers of the quetzal bird. It is interesting that even though the shells had to be imported into the valley, they form one of the major motifs on the Temple of Quetzalcoatl. Trade in metal came only much later, and a remarkable feature of the Mesoamerican civilizations is the great skill exercised in architecture and sculpture without benefit of metal tools.

The society of Teotihuacan was dominated by an elite group of priests, civic officials, and, probably, wealthy merchants. The priests officiated at ceremonies which took place in front of the temples that crowned the pyramids and which honored, especially, the rain god, Tlaloc; the Feathered Serpent; the Jaguar; the old Fire God; the Butterfly God; and the flayed god, Xipe, so called because he dressed himself in a human skin. Communal dwellings of 150 to 200 rooms facing on patios presumably housed the common people, as there is no evidence of dwellings for them in the ceremonial precinct. War played a part in this society, too, and the military equipment included shields, spears, and clubs. If the estimate of 50,000 persons for Teotihuacan's peak population is correct, it must have been a great city, influencing the whole region with its ideas and its trade goods, and dominating it with its military might.

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[3] M. Covarrubias, Indian Art of Mexico and Central America, p. 137.

Valley of Oaxaca: Monte Alban

During this Classic Age, Monte Alban too had its pyramids, courtyards, and stairways. An astonishing feature of this ceremonial center was its location on a platform 3,117 feet long and 1,476 feet wide, carved by man out of a rocky ridge 1,300 feet above the valley.

In this society, as in many other early civilizations, a profound concern for the dead was a major theme. The famed tombs of Monte Alban were made of well-cut stone and had stone slabs for roofs, while inside, the walls were painted with beautiful frescoes of deities and richly dressed priests. Great funerary urns appear in these tombs, elaborately modeled to represent either personages with aristocratic faces or deities and animals. In one tomb, the remains of slain slaves and companions were recovered. In another, the dead man was honored with two masks, one made of twenty-five sections of highly polished jade, and with a necklace of eighty-one jade beads.

The elite group of Monte Alban had a knowledge of writing and notation, for inscribed glyphs and bar and dot numerals are to be found there on pieces of stone.

Regionalism and Deterioration

Eric Wolf has effectively contrasted the architectural and art styles of the Central and Southern Highlands and the Maya Lowlands:

> The Theocratic Mexican pyramids . . . emphasize horizontal lines. They are man-made mountains of superimposed tiers, rising slowly and ponderously toward the ceremonial hut at the summit, gigantic platforms for a celebration of the contact between man and the supernatural. The Theocratic Maya temple, on the other hand, strove for height. Its public facade was so designed as to give an impression of narrowness and height. The ascending platforms were narrow, the temple itself was small, and the roof of the temple was crowned with an exquisitely carved false front, the roof comb, architecturally an elaboration of the roof-crest of the Maya peasant hut.[4]

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[4] Eric Wolf, Sons of the Shaking Earth, pp. 90-92.

But this Classic Age in Mesoamerica, which produced such impressive regional styles and included many other important centers as well, came to a sudden end between A. D. 800 and A. D. 900. Teotihuacan was destroyed and burned. The Maya ceremonial centers were neglected, and no more stelae were erected to record the passage of time. What happened? It is not known for sure, though some of the earlier explanations such as epidemic disease or earthquakes have been ruled out. Perhaps the land could not support a growing population, given the prevailing methods of agriculture. Lack of an adequate food supply could have led to rebellion against the priest-officials who for so long had determined, in part through their divine knowledge, the time to plant and harvest. Another irritant for the farmers may have been the increasing wealth of the centers in comparison to their lowly state. As for the ruling groups, there could be many reasons why they came upon hard times, though the evidence for these may never turn up. Whatever happened, it is certain that a series of catastrophies occured, and was followed by years of warfare among tribal groups.

An Age of Warfare: A. D. 900 to A. D. 1350

About A. D. 900, a warlike people known as Toltecs raised a capital city of many temples and palaces near Teotihuacan. This city was Tula, and it remained a powerful military center for 450 years. Even today, there can be seen on its Temple of the Morning Star some friezes which alternate in design between one decorated with walking jaguars and one with eagles feeding on human hearts. Another common Tula motif that is similarly aggressive in spirit shows warriors wearing eagle feathers.

Tula was headed jointly by a sacred ruler and a secular one. The sacred ruler was not allowed to pass his office on to one of his family, nor could he associate with women and have children. But legend has it that one such ruler did have a child, named Quetzalcoatl. Quetzalcoatl, it is said, encouraged the sacrifice of jade, snakes, and butterflies rather than humans. But his opponents, who favored human sacrifice, were strong enough to drive him into exile. And human sacrifice, we know, was later carried on extensively by the Aztecs who gained control of this same region.

The strongest enemies of the Toltecs were the Chichimecs, hunters and warriors who moved down from the north, and these two peoples fought for control of the different areas of Mesoamerica. One area where Toltec influence prevailed was the Yucatan Peninsula, site of some late-period Maya cities. Chichen Itza is the most famous of these cities, and due to the Toltec influence its architecture is distinctly different from that of the Classic Maya. The Toltecs worshipped the sun, the moon, and the morning and evening stars, and they favored an open design rather that the temples with small dark rooms which had topped the Classic Mayan pyramids. They also added colonnades to their ceremonial areas, making these most impressive. The traditional ball courts were given over to use by the military orders, and, in line with their preference for human sacrifice, the Toltecs displayed skulls on posts for decoration.

Conquest by the Aztecs

Out of this period of warfare there emerged triumphant the Aztecs, a Chichimec group, who by alliances and deception gained control of the Valley of Mexico and proceeded to extend their empire far and wide. For their capital they built the magnificent city of Tenochtitlan, on the site of present-day Mexico City, which later reminded the Spanish conquerors of Venice because it was crisscrossed by canals. The Aztecs had entered the valley led by a priest chief and a war chief who, it is thought, referred all major decisions to a council, or to all the weapon-bearing men. Their warrior god, Humming-Bird-on-the-Left, had guided them in their travels and was a major deity in their pantheon. The tribe itself was divided into twenty subgroups, or *calpulli*, each of which owned land in common, had its own temples, and later became important as an army unit with its own war leader. But after 1427, when new land was conquered, the Aztec nobility took this land unto themselves and became self-sufficient and strong enough to disregard the *calpulli*. they now had agricultural laborers whom they settled on the land, and they gradually increased the social distance between themselves and these commoners. Still, to some of the commoners the nobility held open the possibility of promotion to the group of knights, or "Sons of the Eagle," and thus benefitted, as other aristocracies have done, from the vitality of the best sons of the commoners. Another group they finally came to control were the great merchants, who, for the protection of their trading routes and to maintain their own customs and temples, paid to the Aztec ruler a yearly tribute of 2,000,000 cotton cloaks and 300,000 cloaks of maguey fiber. Increasingly, the Aztec ruler and the nobility became interested in the profits and taxes from both the trade at local markets (one such market at Tenochtitlan served 60,000 buyers and sellers daily) and also the long-distance trade. From Tenochtitlan were exported such items as slaves, rich clothing, gold, precious stones, and obsidian. To the city from the Gulf region were brought the feathers of the quetzal bird, turquoise, jade, jaguar skins, slaves, and also cacao, which was used as currency. The Aztecs kept slaves, but they were not harshly treated; they could own property, and their children were not slaves.

In accord with most of Mesoamerica, the Aztecs believed that the world had gone through four great cycles, each ending in catastrophe, and was now in the fifth cycle. They felt that they were the people chosen to defend the sun and to prevent the final catastrophe, "The Sun-to-End-in-Earthquakes." To accomplish this goal, they had to take prisoners to provide human sacrifices to the sun, and, for this, continuous warfare was necessary. Their unbelievable and unequaled cruelty, involving thousands of human sacrifices annually, is probably the most widely known feature of Aztec culture. But this was the nation that Hernando Cortes conquered with 508 soldiers in 1521. The catastrophe had come to the Aztecs, but from a different quarter than was expected. The Spanish found people who had a magnificent capital city, great architecture, a knowledge of the calendar and writing, superb craftsmanship in pottery, metalwork, and featherwork, and a highly stratified class system. They also found many neighboring tribes that were only too ready to turn against the Aztecs. Mesoamerican civilization was drastically altered by the Spanish Conquest, though the pattern of village life continued much as before and, in some places, has persisted with little change right up to the present day.

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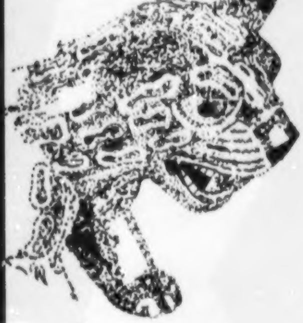
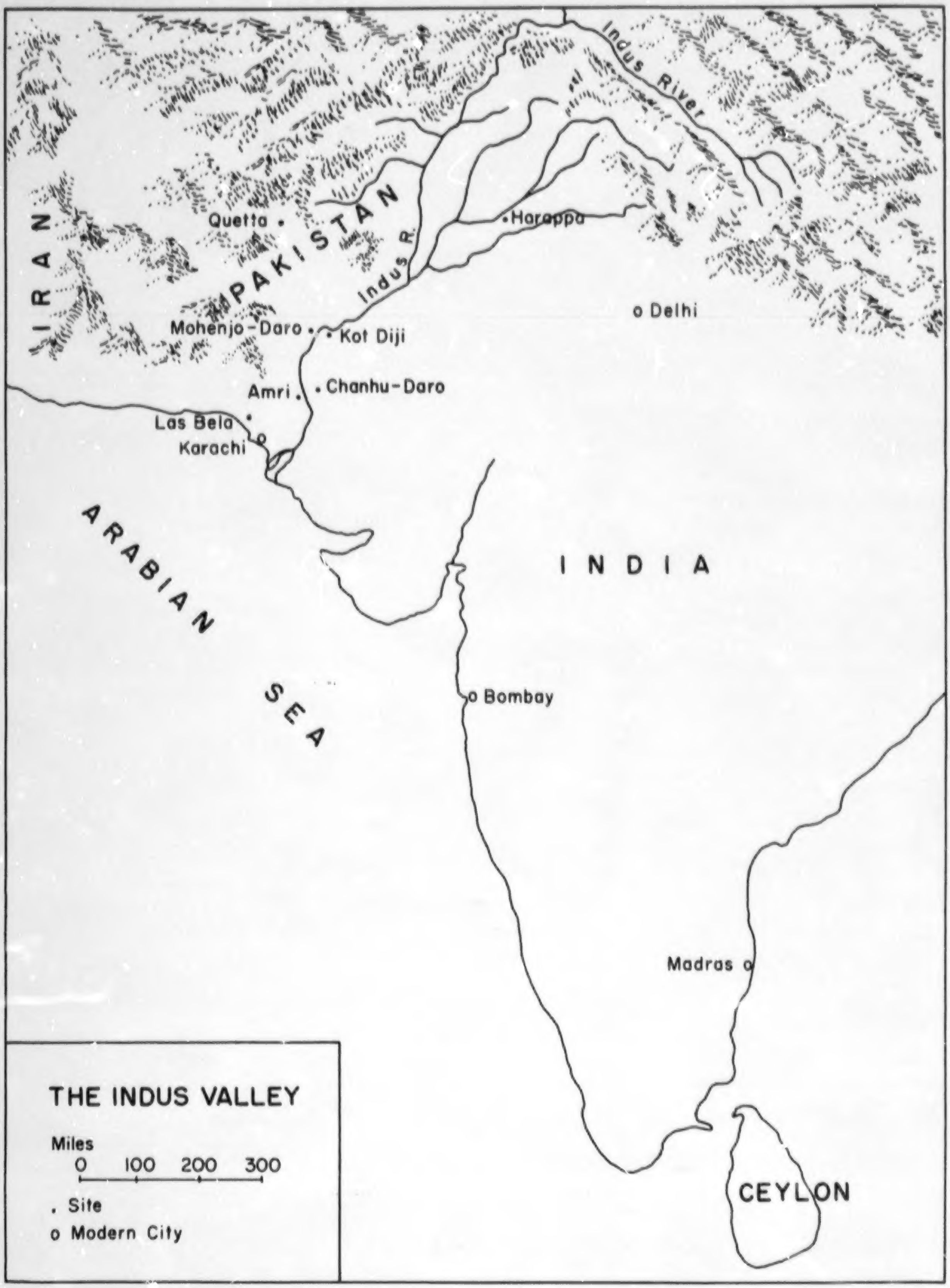


Case Studies
in
The Emergence of Civilization

An Enigmatic Civilization: The Indus Valley



THE INDUS VALLEY

IRAN
PAKISTAN
Quetta
Indus R.
Indus River
Harappa
Delhi
Mohenjo-Daro
Kot Diji
Amri
Chanhu-Daro
Las Bela
Karachi
ARABIAN SEA
INDIA
Bombay
Madras
CEYLON
Miles
0
100
200
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. Site
o Modern City

AN ENIGMATIC CIVILIZATION: THE INDUS VALLEY

The early civilizations of Mesopotamia and Egypt were known, though often in distorted fashion, by the ancient Greeks; ziggurats and pyramids have appeared in history books for a long time. But evidence of the Indus Valley civilization, which flourished in West Pakistan and northwest India between 2500 B. C. and 1500 B. C., was first brought to light only forty years ago. For some time, the two cities known for this civilization, Harappa and Mohenjo-daro, got all the attention. The grid-pattern street plan of these two cities, the Great Bath, brick houses with drainage from the second floor,and the presence of a script (still undeciphered), all combine to make this emergent civilization fully as fascinating as those which are better known. In the last twenty years, many additional sites have been surveyed or excavated, and we now know that the two cities were but a small part of an Indus Valley civilization that included perhaps two or three lesser urban centers and at least a hundred villages and towns. Indeed, the culture of the Indus civilization covered more than 500,000 square miles in all.

At present, there is major disagreement among archeologists on how to interpret the archeological record for the Indus Valley. The difficulty is that more excavation is needed to complete the record. Unfortunately, some of the story has already been lost because of thoughtless vandalism. In the middle of the nineteenth century the builders of the Lahore-Multan railway needed bricks for ballast for the roadbed. Since there were thousands of well-made bricks for the taking at the site of the ancient city of Harappa, they took. In addition, local householders had the habit of helping themselves to brick as needed.

Precivilization

On the plateaus upland from the Indus Valley, the soil was fertile, and the environment satisfactory for village-farming communities. Yet, the alluvium of the valley proper was still more appealing to the uplanders, despite the danger of excess in the annual floods, and it is along waterways that the cities eventually grew up. Unfortunately, we do not know what agricultural methods the farmers used, nor even whether they ever practiced irrigation.

The staple crops were barley and wheat, as in Mesopotamia, but crops such as field peas and sesamum were also grown locally. Among the domesticated animals were the humped bull, domestic buffalo, goat, sheep, dog, pig, horse, and camel. That there was also the domesticated cat, useful in keeping rodents out of grain, is evident from one of those fascinating finds where so little tells so much. At Chanhu-daro, a site near Mohenjo-daro, a brick was found that is described as follows:

> The two tracks on the brick must have been impressed when it was freshly laid out to dry in the sun. . . one . . . is that of a dog. . . . The deep impress of the pads and their spread indicate the speed of the animals. . . the dog's imprint slightly overlapping the cat's shows that he came in second.[1]

It is probable that the key ideas and inventions of the Agricultural Revolution in the Mesopotamian area reached the Indus Valley in its precivilization stage, whether by ship across the Arabian Sea to sites located near its shores, or overland across the Iranian Plateau. But once the borrowings were made, they were Indianized--that is, they were incorporated into a culture quite different from that of Mesopotamia, and more or less transformed in the incorporating. We have already observed this process in pre-dynastic Egypt.

The recently excavated sites which predate Harappa and Mohenjo-daro have been interpreted differently by Sir Mortimer Wheeler and Stuart Piggott, British authorities on Indian archeology, and by Walter Fairservis, Jr., an American archeologist. According to Sir Mortimer, the plateau-dwellers above the Indus Valley made a series of unsuccessful attempts to colonize the valley proper, until finally, a group under a particularly fine leader mastered the new environment, and did so in a simultaneous conquest of all the new problems it presented to them. It was an example of a civilization "exploding" into existence.

Dr. Fairservis, on the other hand, interprets the newer sites as evidence that the development of the Indus Valley civilization was a gradual one,[2] from village-farming communities, to nearly urban towns with Harappan features, to true cities. Moreover, he feels that these precivilization sites are notable for their signs of a deeply religious populace, and that this religious quality persisted to become a basic characteristic of the civilization that followed.

Thus at one such site in the Quetta Valley, there were discovered on top of a large mound a platform with stone drains and the remains of other buildings, a detached human skull at one corner of the platform, and also Harappa-type statuettes or figurines of mother-goddesses and of bulls and cattle painted with symbolic designs. "On thebasis of this evidence," Fairservis states, "we can readily envision ritual bathing, human and animal sacrifices, and the intentional placing of ceremonial structures at the highest point of the village."[3]

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[1] E. J. H. MacKay, Chanhu-daro, p. 222.

[2] Walter Fairservis, Jr., The Harappan Civilization--New Evidence and Theory.

[3] Ibid., p. 21.

At another site, in the Las Bela district, it was again found that large structures were situated on the highest local ground, with ramps or steps leading up to platforms that may have been fitted with drains. This site also revealed groups of rectangular buildings, located on high land above the village farms, some of the buildings being 70 feet in length and divided into compartments. These may have been "hierarchical living quarters or perhaps tombs."[4]

From such sites it seems to Dr. Fairservis that a religion-oriented civilization was present in a developmental stage before the rise of Harappa and Mohenjo-daro. According to him, this religious factor, which emphasized the sacredness of cattle and ritual bathing, and which ascribed power to a hierarchy of priests, was an "intensifier" that brought about the full-blown Indus Valley civilization.

Two Great Cities: Mohenjo-daro and Harappa

Harappa and Mohenjo-daro were about 400 miles apart, but they were very much alike, and we will describe them together as if they were one. Usually the facts will be drawn from Mohenjo-daro.

The city of Mohenjo-daro was laid out on a grid pattern, like most American cities, in blocks that were 800 by 1200 feet square. But within each block, there were winding lanes and alleys onto which the doors of the houses opened, and these doors were more commonly used than the doors fronting on the main streets. If one walked along the main streets, it has been said, one would see little except brick walls, which would of course be a dull and monotonous sight. On the other hand, these bricks may have been bases for "fine wooden superstructures," or the walls may have been painted or plastered as they were in later Indian cities.[5]

The houses were of different sizes, which suggests that some citizens were wealthier than others. But in all, the activities of the household centered on an inner courtyard. Inside, the walls were plastered with mud, and there were stairways to the second story or to the roof. Roofs had a waterproof covering of rush matting and mud. There were no fireplaces, but the people probably used charcoal braziers for cooking and for warmth.

Some buildings were commercial establishments--for example, one had five conical pits in the floor which may have been dyeing vats. Another structure, 250 feet long, had two courtyards and appears to have been a public building of some sort. A third, massive and approached by two symmetrically arranged stairways, may have been a temple. Inside of this was a circular enclosure that may have surrounded a sacred tree but definitely housed a sculptured figure of a squatting man. Finally, there was present a complex of sixteen small houses in two parallel rows, each house being 12 feet by 20 feet in size and containing two rooms. Stuart Piggott has suggested that these were the quarters of government-hired workmen, but Fairservis feels there is no evidence for any inference that the government controlled an army of workmen in this civilization.

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[4] Walter Fairservis, Jr., The Harappan Civilization--New Evidence and Theory, p. 23.

[5] Walter Fairservis, Jr., personal communication.

Two remarkable features of the city were its drainage system and its provision for rubbish removal. In the houses, pipes ran from the bathing room and the latrine on the first floor out to drains under the main streets which in turn led to a soak pit. In some houses, even the second story was serviced by such pipes. Apparently city employees kept the drains in order, and reached them through covered manholes in the streets. Some of the houses also had a rubbish chute that fed into a brick bin from which the rubbish was removed by the city. A part of the population, at least, enjoyed what we think of as "modern" conveniences!

The interesting fact about Mohenjo-daro and the Indus Valley civilization in general is that it produced nothing of importance in the way of monumental sculpture or other esthetic public works. The people appear to have been practical and utilitarian in outlook. They apparently also appreciated order and system in their community life as was exemplified in the neat grid pattern of their city.

True to their practical bent, they developed an accurate set of weights and measures, and then applied them rigidly. Their equivalent of a foot was between 13.0 and 13.2 inches, and the cubit was between 20.3 and 20.8 inches. Surveys of their buildings have revealed that they used these measurements universally in construction. Every brick was like every other brick, and all were so well made that, as we have seen, they are pilfered for re-use even today. Their weights, which were carved from banded grey chert and used 16 as a base number, remained the same over hundreds of years. Their pottery likewise was mostly mass-produced and uninteresting, though there are exceptional examples of pots that were decorated with plant and animal designs or with scenes such as a man holding two fishnets.

Figurines, Seals, and Ornaments

The creative arts, by contrast, were largely slighted. Figurines of mother-goddesses and bulls have been found in quantity at all the sites of this civilization, but the sculpture both of these and of other subjects is undistinguished. Two finely carved male torsos have been discovered, but it is not certain that they belong to Harappan times. There is one lovely bronze figure of a dancing girl as well. The one art at which the Indus Valley people did excel was the carving of seals with remarkably realistic figures of oxlike beast with single horns (unicorns?), short-horned bulls, and other animals.

But seals were private property, not public property, and there is considerable additional evidence that the best craftsmen produced for a private market. Thus the women of the city had gold armlets, conical gold ornaments for their ears, beautiful strings of beads of various types, mirrors, and little rods with which to apply cosmetics. For the children, there were intriguing toys--cattle with heads that wagged when pulled by a string, monkeys that slid down a rope toy carts, and bird-shaped pottery whistles. Pottery rattles containing clay pellets must have delighted the babies. Small terra-cotta cages for insects or small animals have been found, and there is even some evidence of terra-cotta mousetraps! And for those who needed them, there were plenty of dice.

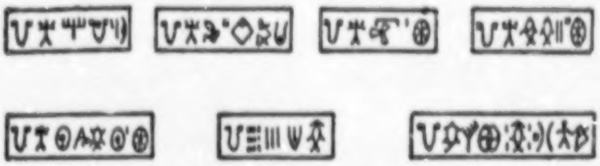
Trade and Commerce

The shops in the city which sold products such as these were doubtless one attraction to the farmers of the Indus Valley villages. Both Mohenjo-daro and Harappa were surrounded by such villages. Land transport was by slow and ponderous oxcarts, but there was also boat traffic up and down the Indus River and its tributaries. The boats were high at the prow and stern, had a mast and sail and a cabin amidship, and they were navigated by an oarsman at the stern. The timber for shipbuilding and other purposes, including the widely used deodar wood, was secured from the Himalayas. Apparently some traders in other products went still farther afield, even to some of the Mesopotamian cities.

An Undeciphered Script

The Indus Valley people did develop a writing system, though it seems particularly apt to say of them that, "Writing was not a deliberate invention, but the incidental by-product of a strong sense of private property." Thus, while writing has been found on sherds, copper tablets, and ivory objects, the best-known inscriptions are on seals that were used for the identification of property. In most cases, such seals contain only a half-dozen letters, placed above animal designs.

The Indus Valley script has not yet been deciphered, though 396 of the signs have been identified. This small number suggests that the Harappan script, as it is known to us, represents a late development, for the number of signs normally diminishes as a script is used. For example, in early Uruk times in Mesopotamia, cuneiform contained 2,000 signs, while by Early Dynastic



Indus Valley writing taken from short inscriptions on seals. (After Cleator) times, it contained only 900. The Harappan signs are precisely formed pictographs, somewhat on the order of Egyptian hieroglyphics. It is interesting that this script is read from right to left on the first line, then left to right on the second, and so on--a practice similar to Early Greek and known as "boustrophedon" (meaning "turning like oxen in plowing"). Students of the Indus Valley civilization believe that the Harappan people got the idea of writing from Mesopotamia, just as the Egyptians did, but that in both cases the respective scripts which evolved were highly distinctive to the civilizations that evolved them. In other words, an idea that spreads to another people may develop a distinctive form.

With the above generalizations about the Indus Valley civilization as background, it is now appropriate to return once more to Mohenjo-daro and Harappa themselves, and to a particular feature of both these cities which has been the special focus of archeological controversy. The question at issue is: How were these cities governed?

Ritual Bathing, Sacred Cattle, and the Three-Faced Male God

Excavations have revealed that to the west and at some remove from each of these cities was a substantial cluster of specialized buildings. One of these was a Great Bath, 39 by 23 feet large and eight feet deep, set atop a citadel, and reached by steps. This Bath was lined with bricks cemented together with gypsum mortar to keep it watertight. It was filled from a nearby well, and was emptied through a corbel-arched drain that fed down the western side of the citadel. North of the Great Bath were eight small rooms, each with a brick staircase that may have led to a second story. These rooms were in two rows facing one another, but the doors were so placed that each room was guaranteed privacy. West of the Great Bath, but still on the citadel, was an imposing granary built of brick and timber, which had a loading platform onto which grain could be hauled up. There were still other buildings on the citadel, but they have not been thoroughly excavated as yet.

North from the citadel were a series of three groups of buildings. Nearest was a double row of small houses, each containing two rooms--a complex, reminiscent of the sixteen houses in two parallel rows which we have already mentioned were found within Mohenjo-daro itself. Next came five rows of circular brick platforms where grain was pounded with long wooden pestles like those still used in the area today. Beyond these was an impressive group of granaries, with an over-all floor space of 9,000 square feet, and fitted with air ducts and vents to keep the buildings dry.

Now, how have these remains been interpreted? On one of the structures, the Great Bath, there has been no disagreement. It is clear that ritual bathing, to cleanse the body and purify the soul, was a basic religious practice of the Indus Valley people, just as it is among many Indians today. As for the eight small rooms north of the Great Bath, it is quite possible that priests performed their ceremonial bathing in them privately, and left the Great Bath for the use of the masses. There is no argument about the fact that there were priests, and that they were in some sense influential.

But what of the other structures? Sir Mortimer Wheeler and Stuart Piggott believe that the double row of small houses were barracks, the housing assigned by an authoritarian government to an army of peasants who manned the pestles on the circular brick platforms and carried grain between the platforms and the granaries in unending antlike activity. Nor was the work of these peasants purely civilian. Sir Mortimer feels that some incompletely excavated remains in the vicinity of the citadel are really the remains of defensive walls, with towers, which surrounded the citadel. In the southeast corner, there were a number of regular bastions, two of which perhaps flanked a postern gate. A hundred clay missiles, weighing six ounces each and forming quite effective ammunition, were recovered from the area of this corner. In Sir Mortimer's interpretation, the citadels of the two capital cities were the headquarters of government, of a regime that regimented the masses into conformity with its demands and a uniform way of life. As the headquarters of government, the citadels were often embattled.

Dr. Fairservis, on the other hand, sees the orientation of the Indus Valley civilization as mainly religious and essentially peaceful. He feels that the evidence is insufficient to warrant inferences about citadel walls, or, in other words, about embattled citadels. Nor is he convinced that the double row of small houses sheltered workmen, or that labor was regimented by an authoritarian government. He suggests that the houses may have been quarters for priests, or perhaps tombs, as at Las Bela. He feels that ideas from European history may have been mistakenly imposed on a quite different kind of civilization, with a resulting distortion in interpretation.

Focusing on religion as he does, Dr. Fairservis sees less discontinuity from the Indus Valley civilization to the present-day South Asia than does Sir Mortimer. Of the religious continuities, ritual bathing is the most obvious example, but there are others. For example, Dr. Fairservis believes that cattle came to assume a sacred position in the Indus Valley when the farmers discovered they could grow more grain by using cattle to draw plows, and cattle are still held sacred in South Asia today. Again, one Harappan seal was carved with a figure of a three-faced male god with horns; he sits with legs bent at the knee and heel to heel, with two beasts on either side--the elephant, tiger, rhinoceros, and buffalo--and two deer at his feet. "There can be little doubt that we have here the prototype of the great god Shiva as Lord of the Beasts and Prince of Yogis; he may have been conceived as four-faced and with his four animals looks to the four quarters of the earth."[6] Shiva is one of the greatest gods in present-day Hinduism.

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[6] Stuart Piggott, Prehistoric India, p. 202.

A Civilization Dies

By about 1500 B. C., Harappa and Mohenjo-daro were showing signs of decay. They grew congested: poorly constructed houses were erected right on lanes within the city blocks, and a kiln appeared on a major street in a residential area. Rooms were partitioned to house more people, and tenements and slums developed.

Why did this civilization collapse? Wheeler and Piggott believe there must have been an invasion that the already declining civilization could not withstand. There is pathetic evidence of a sudden end. In one room were found thirteen men, women, and children who apparently died simultaneously, their skulls smashed with swords. In another part of the city, an ivoryworker and his family were killed, their strangely contorted positions suggesting a horrible death. At the public well, the skeletons of four more individuals were found, two of them trying to make it up the stairs. The people seem to have succumbed before a ruthless force.

Fairservis, on the other hand, suggests that the civilization deteriorated due to a growing imbalance between the food supply and the increasing complexity of ceremonial life. It was a food surplus that made possible a larger population, but the larger population required more land not only for growing food but also for pasturing cattle. According to this hypothesis, the pressure on the land became intolerable precisely when ceremonial life reached a peak of elaboration. Thus, at some point between 1500 B. C. and 1000 B. C., the people moved out of the area to the south, where a new type of food, rice, was being grown.

We know that people from the northern steppe country did move down into India via the Indus Valley, though perhaps not as early as 1500 B. C. However, Fairservis believes that these invaders, including the Aryans, arrived only after the Indus Valley people themselves had departed from their cities. But just what did happen, and how to account for the sudden violent deaths described above, then, is not clear.

Though it may be confusing to be presented with two such different views of a civilization, this contradiction also has its value. We can see how difficult it is, with limited evidence, to recapture with certainty, a past civilization. The Harappan civilization, whatever view we take of it, was, indeed, a civilization. Its urban centers cannot help but impress one. Uniformity and continuity of material goods and of customs and ideas characterize this culture. In somewhat the same way, Egyptian culture early established a pattern which was followed for centuries. It may be that civilizations which are ruled by a religious or religious-political hierarchy, rather than developing out of trade and war as did the Sumerian, are likely to have a more patterned and static culture.

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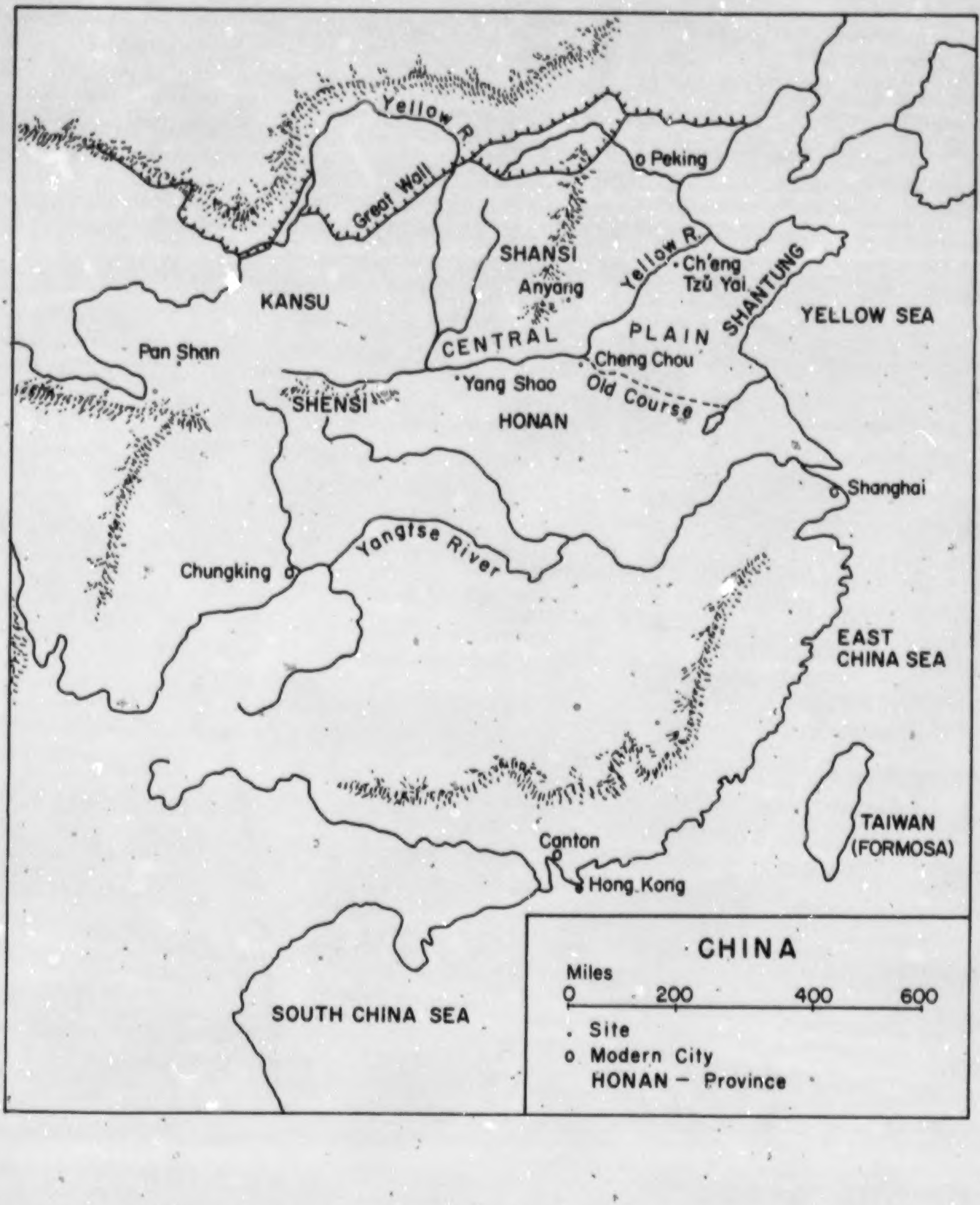
Case Studies

in

The Emergence of Civilization

Bronze Vessels and Oracle Bones; Civilization Develops in China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BRONZE VESSELS AND ORACLE BONES; CIVILIZATION DEVELOPS IN CHINA

Out of the Past

In China, it all began with P'an Ku, the first being, who spent 18,000 years creating the world out of chaos. When he died:

> His head was transmuted into mountains, his breath wind and clouds and his voice thunder; his left eye became the sun; his right eye the moon; his beard... was transformed into stars; his four limbs and five extremities into the four quarters of the globe and the five great mountains; his blood into rivers; his veins and muscles into the strata of the earth, and his flesh into the soil; his skin and the hairs thereon into plants and trees; his teeth and bones into minerals; his marrow into pearls and precious stones; his sweat descended as rain while the parasites which infested his body, being impregnated by the wind, were the origin of the human race.[1]

Following this great event came the Heavenly Emperors, the Terrestrial Emperors, and the Human Emperors, who lived amazingly long and were responsible, in the great tradition of culture heroes, for bringing to men such important inventions as fire and cooking, agriculture and writing. They also taught the Chinese the value of living in social harmony. Then, tradition had it, came the first dynasties, Hsia and Shang.[2]

Until recently, all this, including the Shang Dynasty, was thought to be purely mythical. But between 1928 and 1936, the Chinese National Research Institute brought to light the city of Anyang, capital of the Shang emperors. Additional excavations in those same years also revealed pre-Shang village-farming communities. However, it is doubtful whether any really early neolithic sites have yet been found in China.

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[1] C. A. S. Williams, Outlines of Chinese Symbolism and Art Motives, Shanghai, Kelly & Washburn Ltd. 1941, p. 314, as quoted by Walter Fairservis, Jr., in The Origins of Oriental Civilization, p. 78.

[2] Walter Fairservis, Jr., personal communication.

Both the village-farming communities and the earliest civilization developed on the Central Plain of China, especially in the "North China Nuclear Area" where the modern provinces of Honan, Shansi, and Shensi intersect. The Central Plain straddles the middle and lower Yellow River, or Hwang Ho; it is one of the great river valleys of China, and is subject to periodic floods. It is a well-defined area, with quasi-steppeland or desert to the north, mountain barriers to the west, and a series of mountain ranges to the south. Its most remarkable feature is its soil, called "loess"--"a fine, compact and permeable soil, fertile and easily worked, which is believed to have been carried by wind from hither Asia during the Pleistocene period."[3] In places, the loess is 200 to 300 feet deep; it has been called the best agricultural soil in the world. A mixed blessing in this region has been the periodic flooding of the river which at times provided needed water for the working of the soil but at other times has been at least as destructive as the great rivers of Mesopotamia. It is interesting to note that the legendary emperor, TaYü, became famous because he succeeded in mastering a flood through inventing a system of river control.

It appears that the *idea* of agriculture came to the Chinese from Southwest Asia, perhaps by "stimulus diffusion" from Mesopotamia to the Iranian Plateau, thence north of the Himalayas to Turkestan, and then eastward to Kansu Province in China. Stimulus diffusion "involves the passage of a technique from one area to another because the people of the two areas are in contact and the ideas and advances of one become the ideas and advances of the other in order to maintain a kind of cultural balance. This process is usually a gradual one . . . ."[4] But when the idea of agriculture reached China, the Chinese expressed it in forms peculiarly their own.

Between the village-farming communities and the Shang civilization, there is a time-gap in the archeological record of China, so that some highly sophisticated accomplishments seem to appear abruptly and without precedent in Shang times. The question is: Where did these accomplishments originate?

Village-Farming Communities: Regionalism

Yang Shao. The neolithic culture of central and northwest China is named "Yang Shao," after a site in Honan Province. The estimated dates for this culture range from 3000 B.C. - 1750 B.C. to 2000 B.C. - 1500 B.C. Probably 2200 B.C. is a reasonable date for Yang Shao Village itself.

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[3] William Watson, *China*, p. 13.

[4] Walter Fairservis, Jr., *Origins of Oriental Civilization*, p. 104.

The people of this period lived in villages on terraces above the floodplain. To the north of the village was the cemetery. Some of the later Yang Shao villages also had a communal house, about 40 by 60 feet in size, on a village plaza. In some cases, villages clustered together, and one such cluster covered 225 acres of land. There were no substantial defensive walls, nor were any weapons recovered. Apparently life was peaceful.

The houses were circular or rectangular, and semisubterranean. That is, they were partly sunk into the ground like a basement, so--to anyone inside--a visitor would be seen as entering from part way up the wall. A large pillar in the center of the house supported a conical roof that reached almost to the ground outside. Children were buried, not in the cemetery, but in funerary urns beneath the floors of these houses.

The basic foods were different from those we have found in Mesopotamia, Egypt, and the Indus Valley. The chief grain in China was millet or in some places rice. The use of rice is significant because carefully organized planting and the use of irrigation are essential for its proper growth, and this would mean that the villagers had to work closely together. However, millet was by far the major food, and there is no evidence that irrigation played a large role in the development of Chinese economy. The land was cleared for cultivation by cutting down and burning the underbrush. When the soil was exhausted, the people simply packed up and moved, to rebuild their village in a place where the soil was good--a practice widely used in Middle America. Over time, the old fields would be revitalized by new depositions of the windborne loess. In some places, rice was the chief crop, but in the area as a whole, it was decidedly secondary to millet. Domesticated animals included the pig and the dog, which were both eaten, as well as sheep and goats.

The people of Yang Shao produced both textiles and pottery. The pottery was red with geometric designs in black, and was esthetically very fine--much better than that of the later Shang Period. It was fired at over 1000° C. in clay kilns, which were located east of the village. The textiles were woven from hemp, and also from silk. Already at this time these Chinese knew how to raise silkworms and utilize their fibers in weaving--an art that was later elaborated to a point where Marco Polo considered it one of the wonders of Cathay.

Yang Shao: Pan Shan. A regional, and slightly more elaborate, variant of the same Yang Shao culture was found at sites farther west, in Kansu Province. In the cemetery of one such site, Pan Shan, there turned up an exceptionally beautiful pottery on which "iron and manganese pigment is used to produce black, red and brown in combination, applied on this burnished surface in a rich variety of spiral, wave-shaped, rhomboid and many other geometric patterns."[5] Some of the pottery indicates that the Kansu Chinese had already mastered the potter's wheel. Two of the forms--the li, or three-legged tripod vessel, and the ting, or three-legged bowl --continued popular in China for centuries afterward, except that later they were cast in bronze. The Kansu Chinese also produced polished stone tools, fine objects of jade, and rings and bracelets.

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[5] William Watson, China, p. 42.

These Kansu people gave reverent attention to their dead, and buried with them, among other things, a special pottery with a very distinctive design in red. Andersson was greatly moved when he uncovered some of their graves:

> It then became clear that the settlers in the T'ao valley of that age carried their dead 10 km. or more from the villages up steep paths to hilltops situated fully 400 meters above the dwellings of the living to resting places from which they could behold in a wide circle the place where they had grown up, worked, grown grey and at last found a grave swept by the winds and bathed in sunshine.
>
> It must indeed have been a strong, virile and nature-loving people which was at pains to give to its departed such a dominating resting place, and as I sat there on a grave mound that sunlit day in June I tried in imagination to reconstruct the funeral procession which assuredly slowly wound its way with great pomp and now forever forgotten ceremonies up the mountain sides.[6]

How often we have seen that the burial of the dead brought forth man's deepest concerns, leading him to devote time, energy, and wealth to achieving a fitting tribute.

Lung Shan. A somewhat different, and in certain places a later, culture has been found in the coastal area to the northeast of the Yang Shao sites. This culture, known as Lung Shan, was more elaborate than the central Yang Shao culture. It has often been referred to as the "Black Pottery tradition," because of the type of polished pottery found at its sites such as Ch'eng Tzŭ Yai, but such terminology is not very precise since polished gray and polished red pottery have also been recovered.

The coastal habitat of the Lung Shan people was reflected in their diet, which included fresh-water mollusks and probably much fish. Also, they used shells to make knives and scrapers. But they were still farmers, though we do not know what crops they grew, and they certainly kept pigs, cows, and goats.

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[6] J. G. Andersson, Children of the Yellow Earth, pp. 268-69.

It is possible that the Lung Shan people farmed intensively, practicing irrigation and using fertilizer, for though their communities were smaller than the Yang Shao villages, they were more densely populated. A degree of specialization had probably developed, at least on the part of potters and of diviners or priests. Thus in this culture, scapulimancy was practiced--that is, diviners subjected the shoulder bones of animals to heat in a prescribed way, and then interpreted the resultant lines or cracks as messages from the deities. The dead were now buried in earthen pits with pots, axes, and arrows as grave goods. The Lung Shan villages--or were they towns?--were surrounded with protective earthen walls.

At some sites, Lung Shan black pottery has been found immediately below a stratum containing gray pottery of the next period - Shang. This suggests that there was historical continuity from Lung Shan to Shang times. At the same time, there were striking differences between the Lung Shan and Shang cultures. In the Shang case, these differences added up to civilization.

Anyang: A Royal Shang City

It appears that conquering forces invaded the Lung Shan area, who built themselves a royal capital with high earthen defensive walls, and whose ruler could command an army to keep the surrounding territory under his control. Whoever these conquerors were, they had received important ideas from the civilizations to the west: writing, bronze, and the wheel. In the Near East, bronze was used for ornaments by 3000 B.C., and had become an important part of the economy by 2000 B.C. Its use reached as far as Britain by 1500 B.C., so its appearance in China by 1400 B.C. is not surprising. There is some reasonably clear evidence of the diffusion from the Near East to China of such art motifs as the intertwining monsters and the hero standing between two animals. Further, jar covers found at Jemdet Nasr near Nippur in Mesopotamia, then at Mohenjo-daro, and later in China, are all of the same shape. But we know almost nothing of when and how these ideas, which were of such importance to the establishment of the Shang Dynasty, spread, except that, as previously stated, the route may well have been across the Iranian plateau and Turkestan to China.

The Shang Period (1500 B.C. - 1027 B.C.), ushered in a dynasty of kings, who ruled from Anyang, "a city of palaces." This city in Honan Province was protected on three sides by the Yellow River and on the fourth by mountains, and it was further surrounded by a wall eleven feet high and two feet thick. Whatever luxuries the king enjoyed, a sense of security was clearly not among them.

Only sixteen acres of Anyang City have been excavated to date, but this area contains a number of raised platforms of pounded earth--one of them 90 by 30 feet --on which great buildings must have stood. The remains for one such building show evidence of three parallel rows of stone or bronze pillar-bases, which must have supported wooden pillars that held up the roof. Between the pillars there were probably wood or lattice sidings, though the wood has long since decayed. It is believed that the interiors of such palaces, or temples, were painted with polychrome frescoes and adorned with statuary, also that the pillars were inlaid with ivory from boars' tusks. Both animals and humans were sacrificed when major buildings were erected, for five chariots and arms-bearing men were found buried in a courtyard around which such buildings were grouped.

Eight of the royal tombs located outside the walls of Anyang have been excavated, and reveal that the rulers were buried as lavishly as they had lived. These tombs were composed of deep central shafts, reached on all four sides by ramps of which the important one, the one traversed by the funeral procession, was on the south. Among the grave goods, there have been found magnificent bronze vessels, bronze weapons, pottery, carved bone, jade, and also animals and humans. One tomb contained on the steps of the ramps many human skulls arranged in groups of ten. Another contained a chariot, buried with its horses and the driver, and many other persons who may have been members of the court.

At Wu Kuan Ts'us, a site close to Anyang,

> The ramps were guarded by sentinels, one buried crouched, the other holding a halberd. Three pits in the north ramp held sixteen slaughtered horses, and further dogs and horses were buried in the south ramp. In the rammed-earth filling of the pit over the burial chamber were included the bodies of deer, monkeys and dogs, and in an upper layer thirty-four human skulls set upright in rows and looking toward the centre. In small pits to the south of the main tomb were found headless human skeletons buried in groups of ten.[7]

Such sacrifices of animals and humans, however replusive they may seem to us today, tell us of the wealth and power of the monarch.

The Shang rulers evidently kept their army in a state of preparedness for battle. Chariots, which were easily maneuvered on the level plain, were common, and horses were used to draw them, though they were not ridden. One major weapon was a four-foot composite bow with a double curve, which had a powerful thrust and was used by the warrior who rode beside the driver in a chariot. Another major weapon was the halberd, which had a three-foot shaft and was particularly effective in close fighting. Battle-axes and daggers were additional parts of the soldiers' equipment. Warriors carried round or rectangular shields for protection in close combat, and some wore bronze helmets with colorful plumes.

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[7] William Watson, China, pp. 73-74.

Some weapons were ornately decorated, and were so elaborate that they may have been used, not for war, but for ceremonial purposes--for what are referred to as "funeral slaughters." Others may have been used by the king for his favorite pastime, hunting wild game in the nearby mountains. No less than 348 animals were taken on one such hunt.

Craftsmen settled in cities such as Anyang where there was a ready market for their goods, so that one part of Anyang was an artisans' quarter and was further divided into sections accommodating particular types of craftsmen. For example, there were sections of jadeworkers, bonecarvers, woodworkers, potters, and so on. Pottery-making continued to be a flourishing industry, though with less attention to esthetic quality, and two technological innovations occurred. For one, it was at this time that potters began using the pure white clay, called kaolin, which two thousand years later was used for fine porcelains. Also, at this time they discovered how to glaze pots, and applied a hard feldspath glaze to the whole surface of their pots.

However, the most famous products of any of the artisans were the Shang bronzes, the designs on which were probably copied from designs on earlier wooden vessels. It is these bronzes which, in present-day museums, have astounded connoisseurs with their magnificent craftsmanship and great beauty. Since the Chinese never went through a phase of working copper, some scholars believe they must have got the idea of adding tin to copper, to produce bronze, from Southwest Asia. On the other hand, some Chinese archeologists believe that bronzeworking developed independently in China. Wherever the idea came from, the Chinese raised the practice to heights of accomplishment in Shang times.

Bronze factories have been discovered at two sites, so that we know something of the technology employed. Within sixty miles of Anyang, there were deposits of both copper and tin, and the ore was refined on the spot. Using bellows to achieve a heat strong enough to melt the metals, the bronzemakers at one time mixed two parts of tin with ten of copper, but later also added lead, perhaps up to 30% of the total alloy. This molten alloy they poured into clay molds directly, for over a thousand fragments of such molds have been recovered from one workshop. However, they also used the lost-wax, or cire perdue, process.

As for the function of bronze vessels, most of them were produced for ritual purposes. Thus sacrificial meat was cooked on some, so that the fragrance of the rising smoke would delight the ancestors and the deities. Wine was poured on the ground from bronze libation jars, again for the enjoyment of the ancestors and the deities. The decoration on these vessels had religious or magical significance: for example, scrolls were associated with thunder, hence with rain and with fertility of the crops. The most common motif was the t'ao t'ieh, or monster mask--"a distillation of feline ferocity"--and the second most common motif was the dragon in profile. Interestingly enough, if a line is drawn down the middle of some of the monster masks, each half looks like a dragon. Most designs took parts of animal and bird forms and meshed these together into intricate patterns.

In the later Shang Period, whole vessels were made in the form of a ram, an elephant, or an owl.

Two other Shang arts which deserve mention are sculpture and music. For a long time it was believed that the Shang people produced no sculpture, but now we have examples of it, in white and black marble, limestone, and jade, which range in size from a few inches to bigger than life-size. The subject is mostly birds, animals, and mythical monsters. Only one example of a human subject has been found, a limestone figure of a seated man. As for music, we have but one musical instrument, a small "Chinese ocarina" made of bone. However, on this 3,000-year-old instrument, the interval from "do" to "fa" is a perfect fourth. Furthermore, the notes sounded by blowing into the ocarina are "the first five notes of the major scale, involving a half-step which is not present at all in the modern Chinese five-tone scale."[8]

Apart from the bronzes and the contents of the royal tombs, the most exciting artifacts of the Shang Period are oracle bones, on which there is writing in a relatively early--though already advanced--Chinese script. It appears that neither the ruler nor anyone else cared to make decisions lightly. Rather, they sought the advice of ancestors and other deities first, by writing questions either on the shoulder bones of oxen, or more often on the shells of tortoises, and then heating these and "reading" the answers from the resultant lines and cracks. Specialists called "augurs" read these lines and cracks, although the king himself had, among other qualities, the skill of augury. The questions most frequently asked, especially by the ruler and his family, were concerned with:

> the appropriateness of a sacrifice; was enough being offered and of the right nature;
>
> sickness: will the ruler recover soon;
>
> whether it was a propitious time to begin a military expedition;
>
> whether it was a good time to go on a hunting expedition;
>
> whether it was a proper time for the king to visit another part of his territory;
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> the fertility of crops; will it rain; will it be sunny.

None of the messages was long; most contained ten or twelve words, and the longest was sixty words. Yet, in the aggregate, they tell us much of what we know about the Shang period.

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[8] William Watson, China, p. 101.

It is the oracle bones that make very evident the importance of the ancestors in Chinese religion and thought. A person was of more consequence after death than when living, for, when dead, he was thought capable of bringing prosperity or calamity upon his descendants, depending on how they fulfilled their ritual responsibilities to his spirit. But the royal ancestors were most powerful of all, for should they wreak havoc upon their descendants, they would be wreaking havoc on the state. It is no wonder that the burial of a king was such a solemn and ceremonious affair. The most beautiful white pottery, large marble sculptures, bronze vessels of the finest quality, bronze weapons and helmets were all found in one royal tomb. The excessive use of bronze articles in graves suggests that there was little of it available for the living. One tomb was a pit forty-three feet in depth--big enough to hold a four story building. The labor involved in digging out the tomb, in building the ramps, in filling the tomb with earth stamped down, hopefully, to protect the grave--all this tells us of the reverence with which the royal ancestors were regarded. We have already learned from the oracle bones which activities the ancestors could influence favorably or unfavorably: hunting, agriculture, and war. They could also bring sickness and death; they could bring famine to a country; they could bring defeat to an army.

But other deities required their due, also. The Sumerians gave a personality to salt. As the Shang Chinese saw it, all animate and inanimate nature shared certain human characteristics and required to be properly attended if all was to go well. Thus there were spirits of the rocks, clouds, and mountains, and spirits of the rivers and of fire. Wind was an important deity, and Earth was represented by a small mound in each village. There were also the Dragon Woman and the Eastern and Western Mothers, and many many others. Some authorities think there was a supreme being called Ti or Shang Ti,[9] superior to all the rest, and that the Shangs were monotheists, but most of the evidence points in a different direction. There is no doubt that the ancestors were the most frequent objects of supplications and sacrifices by the Shang people, and that royal ancestors were the most lavishly honored. Thus a single offering to a kingly ancestor consisted of 100 cups of liquor, 100 sheep, and 300 cattle. Such ancestors received semiprecious stones and sometimes jade as well.

We have noted that the writing on the oracle bones in Shang times was already an advanced script. But pre-Shang Chinese writing, which must have been pictographic, was incised or painted on perishable wood, bamboo, or hide, and is forever lost to us. By Shang times, the script contained over 2,500 characters, while modern Chinese has about 70,000 characters. Thus, Chinese script is an exception to the general rule that the longer a script develops, the fewer characters it has; the reason being that it is not a syllabary, much less an alphabet, but rather has always depended heavily on picto grams. Thus the more complex the culture became, the more pictograms had to be added to the script to write about it.

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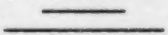
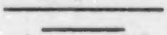
[9] "Ti" was originally a word meaning "sacrifice"; the god becomes the one sacrificed to.

Already in Shang times, though, four principles were expressed in the script. One was continued use of pictograms from pre-Shang times, except that in the Shang Period these were highly conventionalized. Another was the so-called "phonetic loan"--for example, the pictogram for the noun "saw" was loaned to stand for the verb "saw," and another pictogram was used for the noun instead. A third principle, one which accounts for about a half of the Shang characters, combined the pictographic and phonetic principles, as in this character for "house" Here, the outer line is a pictogram representing a house, but since the Shangs had more than one kind of house, they inserted a character pronounced "shih" to specify that this character stands for "a word meaning house and pronounced shih." The fourth principle was the "diagrammatic" principle--for example, the word "up" was written  , and the word "down" was written  . This script was incised on bone or tortoise shell, and was otherwise written with a writing brush and ink, just as it is today.

臣 見 來 鳥 自 東 林 集 于 室

(The) servant saw come birds from (the) eastern grove (and) collect on (the) house.

Whether or not writing was considered an art in Shang times, it certainly became a fine art in later China. Many of the later Chinese "paintings" consisted solely of four or five characters brushed beautifully onto a silk scroll--while, meanwhile, other Chinese were inventing printing for more mundane records. Such artistic elaboration of an original religious dimension to Chinese writing is instructive when we think about the place of writing in the emergence of civilization:

> Probably one of the most provocative, mysterious, and at the same time beautiful aspects of Chinese culture is the written language . . . . The [spoken] language of the Chinese is . . . somewhat harsh as compared to other of the world's tongues. But the writing of the Chinese is quite the opposite . . . No richer mode of expression exists . . . the lights and darks of living are caught in the long strokes or staccato dashes of the calligrapher's pen and are interwoven by usage into an exact meaning or a suggestion only of that meaning.[10]

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[10] Walter Fairservis, Jr., The Origins of Oriental Civilization, p. 114.

Civilization, Shang Style

The Chinese archeologist, Li Chi, believes that the ancestors of the Shang conquered the Black Pottery people, absorbing some of their art tradition, and later also conquered Hsia, which was not a dynasty antedating Shang but rather a small state. If the Shangs were conquerors--and we have seen that they certainly emphasized military preparedness--perhaps we should not be surprised if sites do not display a uniform stratigraphic progression through time. There was cultural regionalism before the Shangs took over, and doubtless it persisted, for if some people surrendered to the conquerors, doubtless others found ways to simply look as if they had.

Furthermore, the state of which Anyang was the capital did not have a highly centralized government. Perhaps the king posted officials to various regions of his kingdom, but there these officials consolidated their own power locally, and behaved much like feudal lords. It has even been suggested that a number of petty kingdoms already existed when the Shangs arrived, so that the Shang conquest resulted in a loose union of what already existed.

Actually, it appears that the Shang ruling family had little or nothing to do with the masses. They built palaces, temples, and tombs, they warred and they hunted, they questioned the ancestors and the gods and they sacrificed to them, but for the rest, they let the local officials rule the kingdom. If they had contact with commoners at all, presumably it was with the artisans who produced the goods with which they lived in utmost luxury.

The vast majority of the people, meantime, were no doubt living in the same villages where their parents, grandparents, great grandparents, and remoter ancestors had lived. They were farmers, raising mainly millet but also some rice. They had dogs, pigs, sheep, and goats, and they used water buffalo or oxen to pull their carts. They grew hemp to weave into textiles. There is no indication that large-scale irrigation was practiced anywhere. When people of different villages met, it was sometimes to argue over the use of disputed pasture land, sometimes to trade. However, villages were basically self-sufficient. Indeed, ordinary men were untouched by the existence of a grand capital at Anyang, and one wonders whether most of them even knew about it. Their way of life looks very much the same as life in Lung Shan.

What, then, distinguished the Shang Dynasty? It was a society with urban centers, two of which have already been partially excavated -- Anyang and Cheng Chou.[11] These were royal centers whose cemeteries, with their royal tombs, tell us clearly of a class-stratified society from the royalty with great power and wealth, both in life and death, on down to a class of slaves. In these cities were great palaces and temples about which we know very little because they were built of materials which have long since perished. Also living and working in the city were many craftsmen who specialized in pottery, jade carving, or bronze working, whose work was traded between communities, and who got some of their materials from places as far distant as the Pacific Ocean. It was a society with a highly developed writing that already incorporated the major principles Chinese writing was to follow for centuries to come. Both in bronze vessels and in sculpture, this was a civilization with a sophisticated and distinguished art style. The focus was a religious one, especially in the respect paid to the ancestors. It was for this reason that the royal burials were on such a grand scale because, as ancestors, they had such great influence on the most important activities of the living. It was a society which gained many ideas from the civilizations which preceded it in the Near East, but which took each one and gave it a quite different form. Much more archeological work has yet to be done before we will have a full picture of the development of civilization out of the Lung Shan culture, and of the nature of the Shang culture itself.

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[11] Excavation at Cheng Chou began in 1953, and since comparatively little is known of it, this description has focused on Anyang. Cheng Chou was apparently built one or two hundred years earlier than Anyang.

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Thinking about the Growth of Civilization

New Evidence and New Understanding

THINKING ABOUT THE GROWTH OF CIVILIZATION
New Evidence and New Understanding

Since as far back in time as the ancient Greeks, men have speculated about the origin and growth of the early civilizations, looking for an explanation of the developments that took place in these various areas of the world. Any explanation--or theory--about the development of civilization depends, of course, on the available evidence. It also depends on the scholar's understanding of how human societies grow and change from simpler forms--like village-farming communities--to more complex forms--like Sumerian city-states.

Scholars of the nineteenth century, working with the evidence then available and believing that there was one principal factor responsible for the growth of civilization, looked for a single cause. The racial theory of the growth of civilization was one of these. According to this viewpoint, civilization was achieved by a group of people whose biological inheritance caused them to be more energetic and intelligent than other people; only this superior race was thought capable of bringing about those changes which lead to civilization. According to this theory, racial groups which were less gifted biologically could never originate civilization on their own and could only adopt it from the more gifted. Some nineteenth-century European scholars went so far as to argue that even the continued growth and vitality of a civilization is possible only when a superior race exercises a guiding role. According to the racial theory, even when the same favorable conditions of physical environment and of technological development existed, the genius of a particularly favored race was needed to transform and develop these into a civilization.

Modern scientific research has thoroughly discredited the racial theory of the growth of civilization. Modern research in anthropology, in biology, psychology, and related fields, reveals that there are no significant differences in mental and physical ability between racial groups. The range of variation in ability among the members within any one racial group is greater than the differences in ability between any of the racial groups. The independent development of civilization in places as widely separated as Mesopotamia and Middle America cannot be explained by race; the Indians of Middle America and the inhabitants of Mesopotamia are certainly not closely related genetically. Moreover, the same group of people may show much more cultural energy at one time in their history than at another--even though there is no evidence of change in the racial composition of the group. In the first century Before Christ Cicero said of the Britons, "Do not obtain your slaves from the Britons, for the Britons are so stupid and so dull they are not fit to be slaves."[1] But 2,000 years later the relative position of Cicero's descendants and of the Britons was quite different. The racial theory does not explain the development of civilization, but, despite all the evidence to the contrary, this erroneous theory is still held by many people.

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[1] E. A. Hoebel, Man in the Primitive World, pp. 145-6.

The second commonly accepted theory which emphasizes one principal factor, attributes the growth of early civilization to a particularly favorable physical environment. Assume that a people have acquired knowledge of agriculture and of the domestication of animals. Assume, too, that they happen to live in a temperate climate, and in an area where the soil is very fertile, perhaps in a great river valley. Additional characteristics of their situation might be the availability of stone and copper, or an abundant supply of fish. According to the environmental theory, factors such as these lead to the development of civilization.

Although the environmental theory does stress many important factors, it does not provide an adequate explanation of the emergence of civilization. Similar environments have not always led to similar developments in man's way of life. Temperate climates and abundant resources exists in many areas of the earth--and yet civilization has emerged in only a few of them. Environmental factors are very influential in the development of each civilization, but they are not a sufficient explanation of the emergence in general. Particular characteristics of the physical enviroment do affect the particular development of each civilization. For example, the animals domesticated in the New World were not traction animals--they could not be used for pulling wheeled vehicles--a characteristic which accounts for the absence of the use of the wheel for transportation in the New World. Many such influences have been apparent in the growth of each civilization, but the environmental theory is inadequate as an explanation of the general development of civilization.

A third theory regarding the origin of civilization lays stress upon irrigation. Though this theory also focuses on one primary cause, it is a more complex factor than race or physical environment. This theory emphasizes the importance of a series of technical, social, and political activities centering upon irrigation agriculture. An example from ancient Egypt illustrates the ways in which irrigation may influence the emergence of civilization. The soil along the banks of the Nile River is very fertile, but since there is little rainfall, crops are abundant only when water is brought to the farm land. Irrigating the soil is a complex technological feat. The river water is diverted to flow through a network of shallow irrigation canals so that the moisture will reach as much of the land as possible. These canals have to be dug, cleaned, and extended when necessary. In some cases the water had to be lifted from the river to the place where the canals begin; in other cases canals were cut through swampy areas. Banks of earth or dikes had to be built in order to protect the canals against flooding.

This type of irrigation demands that farmers work cooperatively; the canals must be kept clean and the dams secure, in order for the system to work. Moreover, central planning is needed to build the dikes, dig the ditches, and apportion the supply of water. This need for cooperation and planning means that some persons may come to exercise control over others. To put it differently, as the irrigation system expands, and covers more and more territory, the sheer scope of the enterprise demands centralized leadership. Moreover, this theory continue's, the abundant crops made possible by irrigation encourage the farmer to accept first local, and then central, leaders. The ordinary farmers submit their grain surplus to the leaders who,in turn, continue to manage the system for the benefit of all of its members. The leaders may also have ceremonial tasks; for example, their special relationship to the gods helps to maintain the soil's fertility and to prevent floods. As these irrigation systems expand, or several small systems are joined together, a regional irrigation system develops. Some local leaders rise to positions of greater control and wealth, and then become ruling groups or monarchs whose influence is felt throughout the nation. Finally, some monarchs achieve sufficient wealth for them to build great palaces and temples, engage full-time specialists, and encourage the arts.

This theory has a nice logic to it. However, it is important to keep certain questions in mind. Is there evidence that all six civilizations did develop irrigation? At what levels in the development of civilization was irrigation maintained by community cooperation alone, and at what levels was it practiced on such a large scale that it must have required centralized authority? And is such a centralized authority the only way in which such enterprises as large-scale irrigation can be handled? Perhaps we, in the twentieth century, are so preoccupied with competition and with authority as the way to "get things done," that we fail to see that this might be accomplished also by cooperation.

So far we have mentioned only theories which emphasize one major cause for the growth of civilization. Each of these theories has the disadvantage of overlooking some of the characteristics of the early civilization. Recently, scholars interested in understanding the riddle of civilization's emergence, have ceased looking for a single cause to explain such a complex development. Julian Steward, writing in 1955 about early civilizations, suggested that there is not just one line of development but rather that there are multiple lines developing at the same time. This theory suggests that each civilization evolved through a series of stages. It seeks to determine whether the same series of changes occurred in each of the six civilizations, and whether these changes occurred in the same order in all of them. Archeologists can tell us what they have found at various levels of their "digs" and how they have interpreted their finds. Each level is characterized by toolsand other artifacts that show distinctive social and technical accomplishments. The lowest (earliest) levels may, for example, indicate that a group had developed pottery, weaving, and metallurgical skills; the kind of grain found may indicate that the group did not just gather food, but also cultivated it. Other evidence may point to certain social and economic features that accompany the basic technologies and early agriculture--irrigation on a local scale, community government, religious buildings, and so forth. These features mark off a particular period of time during which they are the dominant characteristics; they represent a stage in the history of a particular civilization. The next stage may be typified by enlargement of irrigation works, craft specialization, more sophisticated art, social classes, growth of large states, and so forth.

As may be seen, the later stage shows more complexity, enlargement of community, specialization. Steward's theory, then, describes an evolutionary development of civilization, from simple to complex, in which any given stage is necessarily preceded by certain earlier developments. For example, until some form of local government had developed, regional governments that included a number of communities could not arise. In addition, this theory also stresses cause and effect relations within each stage--larger irrigation systems affect the economic and political structure of society, more craft specialists influence the development of cities, and so on. This theory, then, emphasizes the interplay of factors at any particular historical time, and also considers the cause and effect relationship in the sequence of developments.

Of course, the archeological evidence is not neatly full for all stages of all six early civilizations. For some we can identify a full sequence of development, while for others there are gaps. It is important to remember that all of the civilizations did not necessarily pass through all of the same stages. It is also important to remember that similar stages of the various civilizations are not contemporaneous--they did not all occur at the same time. For example, the period of incipient farming in Mesopotamia was about 7000 B. C.- 4000 B. C. whereas for the Andean region it was 2000 B. C. - 1000 B. C.

The usefulness and reliability of any theory about the development of civilization depends on the available evidence and on understanding the purpose for which the theory was developed. The racial theory, once held quite seriously, is no longer acceptable because of new evidence. The environmental theory is a partial explanation but does not account for the many exceptions. The irrigation theory also places too much emphasis on one set of factors and must be modified with evidence now available. Steward's theory of multiple lines of development makes allowance for the similarities and the distinctive features of each civilization, suggesting ways in which the many, complex factors may be seen in relation to other events--both to earlier events and to contemporary events. It provides a way of thinking about the emergence of civilization.